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ORIGINAL ARTICLES.

INTRASPINAL INJECTION OF LYSOL SOLUTION IN THE TREATMENT OF CEREBROSPINAL MENINGITIS, WITH A REPORT OF THREE CASES.*

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THE report of any method of treatment which is based upon only three cases must necessarily be received with a certain amount of reserve; yet, in a disease with so high a mortality rate as cerebrospinal meningitis, the results in these three cases are so striking that I may be pardoned for publishing this method even after so limited an experience.

In this disease the determination of the prognosis in each individual case is exceedingly difficult, in spite of the fact that the mortality rate is so high. The gloominess of the prognosis is due to the poverty of our therapeutic resources. The perusal of the various monographs on the subject shows how very limited is the sphere of our therapeutic agents. How little advance has been made up to recent times is well shown in the article on this subject in Leyden and Goldscheider's classical treatise "Diseases of the Spinal Cord and Medulla."† Councilman, Mallory and Wright, in their report on this disease published in 1898, even after the introduction of lumbar puncture, give an equally discouraging picture. Eichhorst's monograph, written in 1902,‡ the most recent publication on the subject is equally pessimistic.

So far as we have been able to learn from a review of the literature, methods of treatment have but little influence on the mortality, which, for the epidemic form, is estimated from 20 to 75 per cent. While the sporadic form is not so fatal, yet the mortality of all the cases of cerebrospinal meningitis, (including all varieties of bacteriological origin, the meningococcus being present in most cases) is often over 50 per cent. Among the recent methods of treatment may be mentioned prolonged hot baths at 104° F., from the use of which a number of cases of cure have been reported. The results of laminectomy and washing the spinal canal, as done by Osler and others have not been encouraging. The only real advance in therapeutics is the lumbar puncture, performed once or repeated a number of times during the course of the disease, but this alone has cured only a limited number of cases.

We are indebted to Seager for the publication of a new method of treatment, the results of which are most encouraging. His experience is based upon his observations in a series of cases of the epidemic form at Lisbon.*

This treatment consists of lumbar puncture and the withdrawal by aspiration of varying quantities of cerebrospinal fluid from the spinal canal, frequently amounting to 50 c.c. "Artificial serum is then injected with the same syringe, the needle being left *in situ*, and the surrounding parts are washed with serum; lastly, a quantity (from 9 to 12 c.c.) of a one per cent. solution of lysol is injected through the same instrument and the needle withdrawn. The temperature falls immediately, but rises again after one to three days, when the puncture and injections are repeated, and so on until only quite clear and limpid fluid is withdrawn after puncture, when the injection of lysol is stopped. Afterward a few punctures are made to see if the fluid continues clear." Seager calls attention to the painfulness of the treatment, which, however, my own experience in the three cases treated does not corroborate (see addendum).

Of the 31 cases in Lisbon which were treated with lysol, 13 died—5 from dilatation of the cerebral ventricles, 2 from pulmonary tuberculosis, 1 from edema of the glottis, 1 from purulent pneumonia and 4 from the disease without complications. The 18 that recovered were *completely* cured.

The early plan of treatment in this same epidemic was by hot bath and ice-bag to the head. Under this régime 60 per cent. died Then simple lumbar puncture of the spinal canal was tried in 20 cases, in 3 of which the fluid was already purulent. Of these 20 patients 9 died, and of the 11 who recovered, 1 was deaf, 1 had persistent paralysis of the left arm and 4 had bed sores. The next 7 cases were treated with puncture, removal of the fluid and an injection of oxycyanide of mercury. Of these 7 cases 4 died and 3 were cured. The fluid was purulent in 5 of these cases, 4 of which proved fatal.

The number of cases treated by lysol could have been increased had Seager included 20 cases which were under treatment at the time of his report, but inasmuch as the duration of this disease is often long, he did not include those under treatment, although he states that the majority of them were in such good condition that their recovery seemed assured, hence the results of the treatment are even better than 57 per cent. of complete recoveries in the 31 cases noted above. The presence of the meningococcus was the only characteristic bacteriological finding in the cases.

Of the three cases which I report the first was a meningococcus infection and the second a viru-

*Read before the Section on General Medicine, New York Academy of Medicine, March 15, 1904.

† Nothnagel's Specielle Pathologie und Therapie, 1897, X. Band.

‡ Deutsche Klinik, II. Band, S. 321 et seq.

* Lancet, November 1, 1902.—Seager does not state who first introduced this plan of treatment, but simply reports his observations at the Special Hospital at Lisbon.

lent streptococcus. While it must remain an open question whether the meningococcus case would have recovered without this treatment, since the sporadic cases in adults not infrequently do so, yet the fact remains that the patient was losing ground steadily in spite of the various treatments, including lumbar punctures, which were employed. After the first injection he seemed to hold his own, while following the second his recovery was rapid and uneventful.

Of the second case I can speak with much more assurance, since, at the Mount Sinai Hospital, death has resulted in every case of cerebrospinal meningitis in which the streptococcus was found in the fluid obtained by lumbar puncture. The condition of the child at the time of the first lysol injection was so desperate that no one who saw the case expected him to survive the night, hence his complete recovery without any after-effects is all the more gratifying. It is to be noted that the washing out of the spinal canal with artificial serum was omitted in all of these patients. The injections were all made without anesthesia, except the first one in the child, which was done under slight chloroform narcosis. No pain was complained of and no unpleasant after-effects were noted.

At the present writing all of the patients are perfectly well. The details of the histories, for which I am indebted to Doctors Oppenheimer and Ziegel, of the House Staff, are as follows:

Case I.—J. R., thirty-three years of age, Austrian, tailor, admitted to the Mount Sinai Hospital January 30, 1904. Family and previous history negative in all respects except an uncomplicated attack of measles as a child. Present illness began abruptly six weeks before admission with chill, headache, general bodily pains and fever. The headache, fever and prostration continued for about two weeks when the patient was able to be up. He then had another chill and the headache returned. Stiffness of the neck was complained of and he has since been in bed. He has been vomiting for the past four days, three or four times daily, not projectile. Slight cough and mucopurulent expectoration. Constipation has been a prominent symptom throughout. Urination is very painful and the total quantity is diminished. No herpes. Considerable loss of flesh and strength. Severe headache has prevented sleep, but the mental condition has been soporose.

The main points in the physical examination are as follows: Patient lying on the side with extremities and body flexed, but the head somewhat extended. Considerable rigidity of the neck. Tenderness on percussion of the skull. Some photophobia, pupils markedly contracted, equal, react to light and accommodation; no strabismus. No facial paresis. Ears negative. Tongue is very dry. Marked *tâche cérébrale*. A few small, faint roseolæ on the abdomen. No general hyperesthesia. Abdomen retracted and tender on deep palpation. Tendon reflex somewhat diminished. Kernig's symptom somewhat marked but neither McEwen's nor Babinski's sign. Otherwise the physical examination was negative. Rectal temperature on admission 100.4° F.; pulse 46; respiration 18. *Urine:* Sp. gr., 1.020, total quantity 37 ounces. Faint trace of albumin, no sugar, 2.5 per cent. urea, a few hyaline casts and blood cells. Negative Diazo. White cells 23,000. Negative Widal.

The following day temperature rose to 101° F. in the evening. Pulse ranged between 54 and 66; respiration 18 to 20. Two counts of white cells showed 14,000 in one, 15,000 in the other.

February 1.—Since admission patient has continued to have severe headache with marked tenderness on percussion of the left side of the head. No vomiting since admission. Blood culture by Dr. Libman negative. Patient is mentally clear, but has a dull, apathetic expression. Rigidity of the neck marked. Still very much constipated, cathartics ineffectual. The left knee-jerk more active than the right.

February 2.—Temperature almost normal. Pulse ranged between 50 and 80; respiration 20 to 26. Lumbar puncture yielded 6 c.c. of somewhat turbid fluid which was obtained drop by drop (no pressure). Following lumbar puncture there was no increase of headache. Examination of the eyes by Dr. Gruening was absolutely negative.

February 3.—A few moist râles at the right apex. Two examinations of the sputum yielded no tubercle bacilli.

February 4.—Patient has improved somewhat; slight headache. Slept well. Rigidity of the neck the same. The tâche and the Kernig are still well marked.

February 6.—Recurrence of headache which is now more severe and general—worse on the left side. Tongue very dry and deviates to the left. No facial paresis. Pulse 66 to 68. Second lumbar puncture yielded 3 c.c. of turbid fluid the same as that obtained at the first tapping. Dr. Libman reports that meningococci are present in both specimens; polynuclear cells predominate. Percentage of albumin markedly increased; no reduction of Fehling's solution.

February 7.—The patient complained of severe headache immediately after lumbar puncture; but on the following day he complained much less of it.

February 10.—Yesterday afternoon after seeing visitors patient became stuporous and later almost comatose, with involuntary urination and defecation. Pulse 48 this morning. Takes nourishment with difficulty. Too weak to move in bed. Was given a hot bath at 104° F.

February 12.—Mental condition about the same—very apathetic. Feeding is difficult. Rigidity of the neck is undiminished. Tâche still present; knee-jerks absent. Kernig still present, but less marked. No Babinski or McEwen. Pupils equal, although yesterday the right was larger than the left. No paresis. Fundi negative. Hearing in both sides normal.

February 13.—General condition somewhat worse than on the preceding day and the patient lying on his side curled up in bed with rigid extended neck, almost comatose, in decidedly worse condition than at any time in spite of all treatment, which included prolonged hot baths at 104° F., iodides, ergot, etc. Having decided to use the lysol injection, a lumbar puncture was made and 12½ c.c. of slightly turbid fluid were withdrawn by means of aspirating syringe attached to canula; 9.5 c.c. of sterile one per cent. lysol solution were injected through the canula into the spinal canal, nine minutes being required for the injection. During and immediately after the injection patient was comfortable and no untoward symptoms followed the injection.

February 14.—Patient is just as apathetic as before but does not complain of headache. Pupils are very unequal, the left being larger than the right, but they react to light and accommodation. The pulse is normal but the respiration is slow and somewhat irregular. No knee-jerk obtainable. Rigidity of the neck about the same. Tâche less marked; hypotonia of the muscles.

February 15.—He is decidedly better. Much less apathetic; slight headache only. Rigidity of the neck slightly diminished. Knee-jerks still absent; Kernig and tâche still present. Patient takes nourishment better; has no difficulty in swallowing. He looks brighter.

February 16.—Lumbar puncture attempted, no fluid obtained, but as the needle seemed to be in the spinal canal 10 c.c. of one per cent. lysol solution were slowly injected.

February 17.—Patient improving; no headache. Takes nourishment and sits up. Other signs same as noted. Knee-jerk still absent.

February 18.—Improvement continues. Out of bed. Can now touch chin to sternum.

February 21.—Walks about the ward. No symptoms complained of. No rigidity of the neck. Left pupil still larger than the right. Slight tâche appears very slowly. Knee-jerk obtainable on the left side, not on the right. Kernig's sign still fairly well marked. Pulse 88 to 92; respiration 20. Temperature normal, as it has been practically since February 8.

February 23.—Patient apparently well. Knee-jerks returned. No rigidity of the neck. Pupils equal.

February 26.—Patient discharged cured.

Case II.—Walter A., born in the United States, ten years of age, admitted February 23, 1904, to Mount Sinai Hospital, service of Dr. Sachs, to whose courtesy I am indebted for the privilege of reporting this case. The previous history of this patient will be found in Dr. Gruening's article in the Jacobi Festschrift (1900) entitled "A Case of Otitic Brain Abscess in a Boy Five Years of Age." This history in brief includes an attack of otitis, mastoiditis and brain abscess five years ago for which he was operated upon by Dr. Gruening. The pus from the brain abscess showed streptococci. The boy was discharged cured five weeks after the operation. During the past five years the patient has been absolutely well with the exception of an attack of measles two years ago. There has been no discharge from the ear. The boy was very bright mentally and there were evidently no sequelæ to his otitic brain abscess except loss of hearing on the right side.

Present Illness.—Four days before admission there was a sudden discharge of a large quantity of clear watery fluid from the right ear. Up to to-day there has been no pain, fever or constitutional disturbance. At 4 A.M. to-day there was again a profuse serous discharge from the right ear, the patient complaining of agonizing headache and bursting pain in the right ear. Temperature 104° F. He had a slight convulsion and vomited four or five times. Since this morning he has been stuporous with occasional attacks of restlessness. He is unable to urinate voluntarily.

Examination on Admission, February 23, 1904.—Patient semi-comatose, aroused with difficulty, unable to answer questions or recognize his surroundings. Lies fully flexed with retracted head and rigid neck. Photophobia; some injection of the conjunctivæ. Pupils are equal, moderately dilated and react normally. Left ear is negative. Right ear shows scar of previous operation in right mastoid region; there is tenderness. Profuse serous discharge from the right ear. Tongue moist and coated. Throat negative. Slight glandular enlargement in the anterior cervical and inguinal regions. No McEwen's sign; no *tâche cérébrale*. The respirations are very shallow, rapid (60) and irregular. Heart and lungs negative. Abdomen retracted, generally tympanitic. Liver and spleen negative. Knee-jerks diminished but present. Kernig's symptom present. No Babinski; no clonus. On admission temperature 105° F., pulse 104, respiration 60. White blood cells 22,400.

He was seen by Drs. Gruening and Sachs, the latter advising lumbar puncture, which was immediately performed by Dr. Lilienthal; 10 c.c. of very cloudy cerebrospinal fluid were withdrawn, the fluid being apparently under pressure.

Dr. Libman reports as follows: On standing three-eighths inch purulent deposit. *Cytology.*—Nearly all the cells are polynuclear. Streptococci found in pure culture in spreads and cultures. Albumin markedly increased; no sugar reaction. There was no apparent change in the patient's condition after puncture.

At this time, having been asked to see the case by Dr. R. Abrahams and Dr. Gruening, I advised the use of the lysol injection. Four hours after the first lumbar puncture the second lumbar puncture was made, 9 c.c. of purulent fluid being withdrawn. Dr. Libman's report on this was the same as that on the first, with the exception that the fluid was more cloudy and contained more streptococci. Following the withdrawal of the fluid, 6 c.c. of sterile one per cent. lysol solution were slowly injected through the canula of the lumbar puncture needle.

The patient's condition at the time of the in-

jection may best be inferred from the fact that none of us expected to see him alive on the following morning. During the night, the child, who had previously been stuporous, became very restless and had three general convulsions each lasting a few minutes. Digitalis and bromides were given, also nutritive enemata, since he was unable to take nourishment. On the following morning the temperature dropped to 101° F. He was able to urinate voluntarily.

February 24.—The patient is somewhat improved. Mental condition is soporose with intervals of restlessness. Pupils are equal and contracted. Knee-jerks not obtainable. Kernig's sign is present; no McEwen or Babinski. *Tâche cérébrale* now present. Patient must be catheterized every six hours. Urine, sp. gr. 1.010, trace of albumin; no sugar. Temperature 101° F. Pulse 108, fair quality. Respiration 52, shallow and irregular. Defecation involuntary. The discharge of serous fluid from the ear continues. Examination of the ear by Dr. Gruening shows the presence of a pedunculated mass covered with skin which almost completely occludes the external auditory canal and prevents inspection of the deeper parts. Four P.M. Lumbar puncture. Five c.c. of turbid fluid withdrawn. Dr. Libman's report the same as yesterday except that the streptococci grow much more slowly. A second lysol injection of 8 c.c. of a sterile one per cent. solution was given after the withdrawal of the fluid.

February 25.—Decided improvement in the patient's condition. Nourishment is being taken by mouth. The boy talks at times, though somewhat irrationally; is irritable on being disturbed. Meningeal signs are still present though less marked than yesterday. Temperature 101° to 102° F. Pulse 94, fair quality, slightly irregular. Respiration 30. Involuntary defecation still continues. Urine must still be withdrawn by catheter. Treatment: 2 grains of urotropin b.i.d., sodium bromide 3 grains q. 3 h., fl. ext. digitalis 1 m. t.i.d. Discharge from the ear continues free. Examination of the right fundus shows sharp outline of the disk with veins apparently congested.

February 26.—Improvement continues; patient is perfectly conscious and talks rationally. Complains of diplopia; no objective eye symptoms. No paresis of face or extremities. Knee-jerks have returned; Kernig's sign still present. No tâche. Takes considerable nourishment. Temperature 100.2° F.; pulse 100; respiration 30. Urination is now voluntary. Discharge from the ear as before.

February 27.—Recurrence of headache and stuporous mental condition. Lumbar puncture was repeated, 16 c.c. of clear fluid being obtained. No lysol was injected because the fluid was clear. Dr. Libman reports no bacteria in the smear; no growth in the culture. Culture of discharge from the ear shows numerous streptococci.

February 29.—Though the temperature still ranges from 101° to 103° F. the patient's general condition continues to improve. He is perfectly rational, takes plenty of nourishment, defecates and urinates voluntarily. The only meningeal symptoms which persist are moderate rigidity of the neck and Kernig's sign. Discharge from the ear continues. Culture from the urine shows no streptococci.

March 1.—Temperature 100° to 101° F. Pulse is now regular; respiration no longer rapid, shallow or irregular. Knee-jerks are obtained; Kernig's sign persists, also some rigidity of the neck.

March 2.—Discharge has ceased. Temperature, respiration and pulse normal. Patient looks and acts like a perfectly healthy boy.

March 6.—Out of bed. Perfectly well.

For the details of the *third case* I am indebted to Dr. Seff, of the House Staff of Mount Sinai Hospital. While on his vacation visit to his home in Northumberland, Pa., he was asked by Dr. C. Rutter to see a very severe case of cerebrospinal meningitis. The patient was a boy, six years old, who had had no illness except measles, some years ago. Family history non-tuberculous. An older sister had just recovered from an attack of cerobrospinal meningitis of four weeks' duration.

On March 3, 1904, he became restless and irritable. *March 4.*—At 4 P.M. had severe chill, followed by fever (103.2° F., mouth), pulse 114, respiration 36. Soon the child became stuporus, and rigidity gradually developed. Vomiting was frequent. Examination was negative, excepting the absence of tendon reflexes. During the night, opisthotonos developed. This condition of marked irritability on arousing him, moderate fever, rapid and irregular respirations, pulse about 100, opisthotonos, etc., persisted, and this was the condition when Dr. Seff saw him on March 7. A distressing feature, in addition, was a very marked tympanitic distention of the abdomen. The entire body was covered with a fine papular, vesicular rash. Dr. Seff, knowing the good results in the two cases reported above, advised lumbar puncture and lysol injections. At 11 P.M. 5 c.c. purulent cerebrospinal fluid were withdrawn and 4 c.c. of a one per cent. sterile lysol solution were injected. Almost immediately there was a very abundant discharge of flatus with relief of the abdominal distention, although high enemata of various kinds had failed to relieve it. The night was uneventful; but on the following morning (March 8) the stupor was not so profound, the pulse was of better quality (104), respirations regular, fever 101° F.; the child seemed better in every way and the opisthotonos had disappeared.

March 9.—Child absolutely rational; reflexes have returned; some rigidity still present. Takes food readily.

March 12.—Child is practically well; is on soft diet. Unfortunately no cultures could be made, as Dr. Seff was unprepared for any such emergency.

In conclusion, I would state that I present the

results of these three cases with all the reserve which must necessarily be associated with so limited an experience. Only a more extended trial will enable us to determine whether equally satisfactory results will be obtained in a larger number of cases. It is to be noted that these observations corroborate the results obtained at Lisbon; they are far better than any results which have followed the varied plans of treatment in the severer cases at Mount Sinai Hospital. Furthermore, the treatment is harmless and involves as little risk as does lumbar puncture.

ADDENDUM.—Since the above was read on March 15, 1904, through the courtesy of Dr. B. Oppenheimer, House Surgeon at Mt. Sinai Hospital, I have received a copy of the original Portuguese monograph by Carlos França, "Meningite cerebro-espinhal epidemica," Lisbon, 1903. This essay, which is a very elaborate report on 103 cases of the disease observed in Lisbon, was unfortunately received too late to permit any extended reference while correcting proof sheets, but will be discussed elsewhere. Suffice it to say that as the result of his experience with the very fatal epidemic at Lisbon, França is very hopeful as to the results of the lysol treatment. He is emphatic in asserting that in many cases lumbar puncture alone will not cure severe cases.

The washing of the canal with artificial serum (normal saline solution) was used only in a few cases where the cerebrospinal fluid was very tenacious. This procedure is improperly described by Seager. This method consists in inserting a second canula between the twelfth dorsal and first lumbar vertebræ and injecting the artificial serum with a syringe through the upper canula and allowing it to escape through the lower; this being done until the fluid contains only a few flocculi.

The quantity of lysol solution injected is 3 to 9 c.c. for children and 12 to 15 c.c. for adults. The injections are made daily till the fluid is clear. If there is much hyperesthesia, or if the patient is very rigid, a short chloroform narcosis is advisable.

My subsequent experiences with the lysol treatment will be detailed later. Suffice it to say here that the results thus far obtained more than justify its employment in the severer cases.

Glycogen Reaction of Leucocytes in Tuberculosis.—G. SCHRÖDER (Münch. med. Woch., March 15, 1904) draws attention to the fact that the presence of pyogenic organisms in the sputum of tuberculous patients does not necessarily mean that these germs participate in the process, as they may also occur as harmless saprophytes. Since fresh blood-specimens when treated with a solution of iodine and potassium iodide in gum arabic will give evidence of granules of glycogen in the leucocytes in cases of sepsis and suppuration, it seemed proper to test the blood of consumptives in the same way in the hope of disclosing secondary infection. Twenty-two cases of advanced tuberculosis were tested, but a faintly positive reaction was obtained in only two where true abscesses were present. The intracellular glycogen reaction is thus of no value in tuberculosis.

A CASE OF CARCINOMA OF RETAINED TESTIS.*

BY SINCLAIR TOUSEY, A.M., M.D.,
OF NEW YORK.

THE case which I am about to report was referred to me by Drs. Douglas H. Stewart and Robert Coleman Kemp, and was also seen by Dr. Ferd. Valentine and Dr. T. M. Townsend. It is one of carcinoma of a retained testis, forming a tumor occupying a large part of the abdomen; removal by laparotomy, rapid recovery; evidences of recurrence within two months, and death in about six months; the autopsy showing a carcinomatous mass extending from the third lumbar vertebra to the level of the second rib, and including the aorta and vena cava.

The patient, F. M. F., a musician, was a man, thirty-three years old, with both tuberculosis and cancer in his family history. He was born with a number of malformations, which were attributed to maternal impressions. Among these were claw-like deformities of the hands and feet, some of the phalanges being absent. Both testes were completely within the abdominal cavity and neither could be felt. There was an inguinal hernia; and an exaggerated hypospadias with apparent absence of the penis. The penis was buried in a sulcus which appeared like a vulva, the glans pointing back toward the anus. There was practically no corpus spongiosum, and the whole external genital region was almost as smooth as the palm of the hand, with the urethra hardly to be discovered.

Dr. Stewart operated for this condition in March, 1887, and manufactured a penis of very presentable appearance, and the patient assured us that satisfactory intercourse was accomplished whenever he so desired. This newly formed penis contained no urethra. The operation consisted in dissecting out the penis and doing some plastic work and skin-grafting, and was remarkably successful.

In January, 1899, the patient began to have fainting spells, with pain in the lumbar region; and in 1900 convulsions at night, occurring after physical overwork or exposure. In April, 1902, there was an attack of intense pain in the small of the back which was supposed to be of a rheumatic, neuralgic or tuberculous origin and which continued up to March, 1903, when Dr. Stewart was called to see the patient for the first time in a number of years. The condition then found was one of enormous swelling of the colon, forming a genuine enteroptosis. The patient was referred to Dr. Robert Coleman Kemp, at St. Bartholomew's Clinic. Dr. Kemp applied a Rose's belt, which in forty-eight hours, reduced the swelling to such an extent that the tumor could be felt, and the case was then placed in my hands.

At the time that this patient came to me he was moderately emaciated and presented a tumor occupying the entire lower portion of the abdomen from two inches above the umbilicus. This

* Report read and specimens and photos shown at a meeting of the Genito-urinary Section of the Academy of Medicine, January 20, 1904.

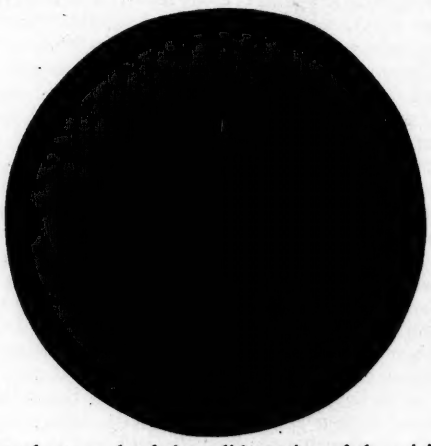
felt softer and cystic on the right side. A fluoroscopic X-ray examination was made, but did not assist in the diagnosis, which was that of tumor of retained testis. We were unable to determine before the operation whether it was of the right or left testis or of both. There was also a right inguinal hernia with considerable thinning of the tissues over it by the prolonged pressure of a truss. Neither testis could be found in the scrotum, groin, or abdomen, and the supposition was that one of them formed the tumor which nearly filled the abdomen. There was very severe pain in the region of the second lumbar vertebra, which made it very difficult for him to lie down at all.

On March 27, 1903, I operated at St. Mark's Hospital, ether being the anesthetic used. An incision was made in the median line from a little above the umbilicus to the pubes, and through this large incision nothing but tumor could be seen or felt. There were a few feathery adhesions between the tumor and the anterior abdominal wall, and on breaking these up it became evident that the tumor was retroperitoneal with a broad base about nine inches in diameter, and that its anterior surface, in contact with the anterior abdominal wall, consisted of the posterior peritoneal coat of the abdomen, which had been gradually lifted forward as the tumor developed behind it.

At first, the appearance of the tumor was that of a fibroid uterus, but later, as the peritoneal investment was cut away at the circumference and the growth was separated from the anterior abdominal wall, a portion of it was found to be a cyst, through the transparent wall of which could be seen about two pints of a clear yellow liquid. The location of this cyst and the appearance of its contents were so peculiar as to elicit a word of caution from one of the surgeons present in the form of the question "Where is his bladder?" A digital prolongation from this cyst extended down into the hernial sac. The cyst and the solid portion of the tumor were inseparably connected, and the entire mass was removed without rupturing the sac. This required only blunt dissection posteriorly, and the only large vessels encountered formed a broad band entering the peritoneal coat from above. The solid portion of the tumor, which I show here, weighed about four pounds, and on microscopical examination proved to be carcinoma with a considerable amount of soft fibrous tissue. None of the normal structure of the testis could be distinguished microscopically.

The patient made a rapid recovery, but in a couple of months a mass could be felt in the upper part of the abdomen a little to the right of the middle line. This at first gave him no trouble and he spent a few months as the musician at a summer hotel. The pain in the back returned, however, and finally became so severe as to cause him to return to the city, where he died on September 11, 1903, about five and a half months after the operation.

At the autopsy the body was found in a frightful state of decomposition, and the microscopical examination of the various portions removed proved valueless. The gross pathology was in part the presence of a carcinomatous mass beginning in the lumbar vertebræ, which were softened and eroded, and surrounding the great vessels to the level of the second rib. The mass was as large as a man's arm, and is shown herewith. The left testis was found in the lower part of the abdomen and was cystic and about the size of a lemon. The prostate was present as a single small middle lobe. No vagina or uterus was found. The spleen was nodular, the liver normal. There was a metastasis, three by two inches in size at the attachment of the diaphragm to the right ribs. The left kidney and ureter were incorporated in the cancerous mass. The right kidney and the portal vessels seem to have escaped. The entire mass was firmly adherent to the spine. The direct cause of death seemed to be an occlusion of the abdominal aorta caused by the pressure of the growth.



Microphotograph of the solid portion of the original growth.

In May, 1903, about two months after the removal of the tumor, the patient was examined by Dr. Ferd. C. Valentine with reference to the genito-urinary conditions and the examination of the urine at that time would have indicated a diagnosis of oxaluria with mild catarrhal pyelonephritis.

103 West Seventy-sixth Street.

Tubercle Bacilli in Milk.—In order to determine the temperature which will kill off tubercle bacilli in milk, W. RULLMANN (Münch. med. Woch., March 22, 1904) added highly virulent sputum to different samples and then subjected them to various degrees of heat. After sterilization, a certain amount was injected into guinea-pigs and an autopsy held several weeks later. All animals were found infected unless the milk was heated up to 68° C. for one hour with constant agitation. If rapidly cooled this milk will not suffer in taste, nor is the albumin, lecithin or enzyme in any way altered.

THE MODIFICATION OF MATTOLI IN THE OPERATION OF VON HACKER FOR GASTRO-ENTEROSTOMY.

BY CARLO SAVINI, M.D.,
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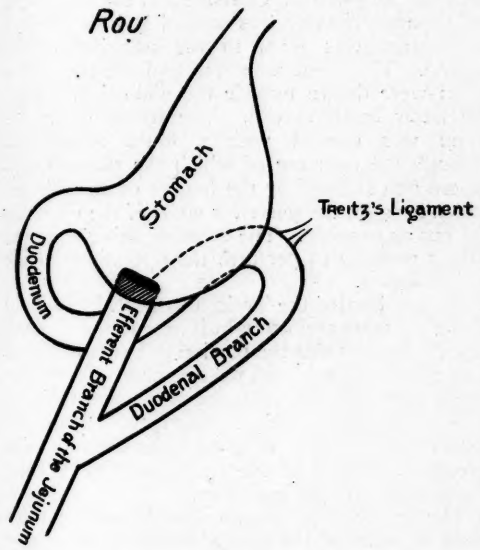
MANY have been the efforts in gastro-enterostomy to obtain with less difficulty and danger the same results as those given by the operation of Roux. The modifications of Chaput and Doyen-Gallet belong to this class, but they are either incomplete or difficult to perform.

Mattoli of Rome has suggested a method which has appealed to my mind as being the most simple and complete and which is worthy of a more general notice than has thus far been accorded to it.

Roux's operation consists mainly in cutting through the jejunum and the mesentery about ten inches below the Treitz ligament, in attaching the

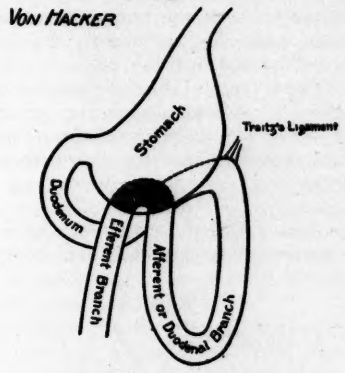
Fig. 1.



terminal or efferent portion of the intestine to the posterior wall of the stomach and in uniting the afferent or duodenal section to the intestine a little below the gastro-entero-anastomosis. A large opening between the stomach and the intestines and a free flow of bile and pancreatic fluid into the jejunum is in this manner secured. Post operation vomiting done away with and the possibility of *circulus vitiosus* avoided, it may be affirmed that this operation procures ideal results, regarded from the standpoint of a restoration of the physiological conditions governing perfect nutrition.

But Roux's method presents technical and other difficulties not to be overlooked. As the use of the Murphy button has many times proved to be unsatisfactory, two terminolateral anastomoses are lengthy and difficult if made with sutures. Once the first step in dividing the jejunum is accomplished the operation must be followed to the end, regardless of the patient's condition, and the surgeon is forced to make two anastomoses, in other words, to perform two operations. The danger of infection resulting from the opening of the intestines is also to be considered.

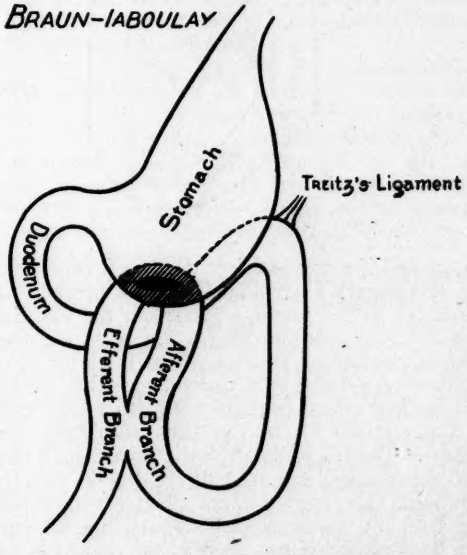
Fig. 2.



The foregoing are some of the reasons why an operation producing such perfect functional results is not more generally performed.

Von Hacker's (gastro-enterostomy posterior transmesocolic) is more simple and more speedy, and when well done is an operation procuring in most cases excellent results, though the possibility of the forming of a spur or valve closing the efferent portion of the intestine and the vomiting of bilious matter and food, often necessitates a secondary operation. In the Von Hacker operation the possible occurrence of a *circulus vitiosus* presents a very serious complication.

Fig. 3.



The Braun-Jaboulay modification, or the an-

astomosis between the two branches of the intestines corrects most of these disadvantages. But even when thus modified von Hacker's operation is inferior to Roux's.

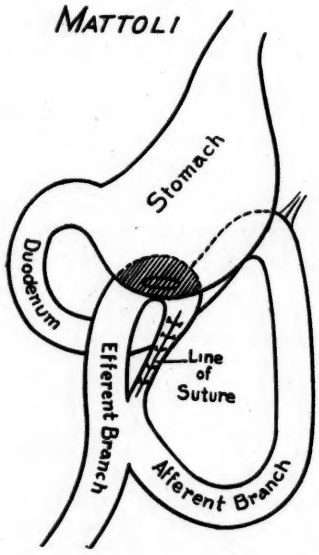
Mattoli's modification consists in transforming the modified von Hacker into an operation offering the practical advantages of a Roux, by closing with sutures the efferent or duodenal portions of the intestines between the two anastomoses. In other words, according to Mattoli, the operation should be performed in three steps:

First.—The jejunum is anastomosed to the posterior wall of the stomach as in the von Hacker.

Second.—The two branches of the jejunum are united and anastomosed together about three inches from the gastro-enterostomy as in the Braun-Jaboulay.

Third.—The afferent branch of the jejunum between the two anastomoses is held between the

Fig. 4.



thumb and the middle finger of the left hand placing the fingers longitudinally. The pressure of the index finger forms a groove in the intestine and the two resulting ridges are sewn together with a number of stitches of an interrupted or continuous suture; as a consequence this section of intestinal tube is here changed into a solid cord.

The *circulus vitiosus* is thus absolutely prevented. The bile and pancreatic juice cannot flow into the stomach and are entirely drained into the jejunum. The patient is not affected with vomiting after the operation and adequate nourishment can be administered as soon as the patient is out of ether. There can be no question that this operation is more safely and quickly performed than the operation of Roux. Besides by adopting this process the surgeon is not compelled to follow it to the end. He may desist at each step if the condition of the patient is not satisfactory.

Having had a recent opportunity to try this method with successful results, I will submit the history of the case.

Mrs. G. M., a widow, fifty years old, was perfectly healthy up to August, 1903, when she began to feel a pain in the right side of the abdomen. From October she had vomiting after meals. Denutrition increased and the vomiting became so frequent that by the middle of December the patient was unable to retain any food whatsoever.

I saw her first in December, 1903, and found her much emaciated, the tumor of the pylorus could be palpated and almost be seen through the thin walls of the abdomen. Having made the diagnosis of epithelioma of the pylorus I advised gastro-enterostomy as a preliminary operation to pylorectomy.

The patient was admitted to St. Mark's Hospital on January 2, 1904, and I performed the operation on January 5. An incision was made between the ensiform cartilage and the umbilicus, the peritoneal cavity was opened and the parietal peritoneum was fixed to the margins of the wound. The great omentum and the transverse colon were drawn outside the abdominal cavity, the latter being spread. The transverse mesocolon was opened with a blunt instrument, through the aperture of which the stomach was drawn and secured by the fingers of an assistant which brought the posterior walls of the viscus as far out as possible. The stomach being enlarged it was possible to perform the operation outside the abdomen.

Having located the Treitz ligament, I took hold of the jejunum and brought it near to the stomach in such manner that the portion to be anastomosed was 25 cm. distant from the ligament. The transverse colon and the epiploon were then replaced in the abdominal cavity. Sterilized towels and gauze sponges were disposed in such a way as to prevent infection of the peritoneal cavity from the contents of the intestines.

The jejunum was sewn to the stomach by three rows of sutures, the first seroserous, the second seromuscular and the third mucomucous. In the same manner I united the two intestines about three inches from the gastro-enterostomy. The afferent portion of the jejunum was then closed by a number of stitches according to Mattoli's method, as above described.

Ether anesthesia was employed and an intravenous saline infusion administered to the patient during the operation. The patient had a spell of vomiting as soon as she was out of ether, but has not vomited since. Four hours after the operation she was able to retain fluid nutrition and solid food was given on the second day. Convalescence was uneventful. The temperature has always been normal. The wound healed by primary union. Twelve days after the operation the stitches were removed and in two weeks the patient was permitted to leave her bed. She was discharged from the hospital on January 30, 1904.

206 East Seventeenth Street.

ASTHENOPIA: A CLINICAL STUDY.*

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UNDER the term asthenopia are included a long train of symptoms, subjective and objective, that result from faulty formation of the eyes, from an overuse or improper use of the organs of vision, or from both.

Definition.—The word asthenopia is a compound derivative, literally meaning without strong sight; ordinarily called "eye-strain."

Prevalence.—How common is the complaint "weak eyes"; "poor vision"! More and more frequent is this becoming; not so much so in rural districts, where life is less intense, but in crowded populous cities, where the rush of daily living demands constant application of the eyes at close range many hours in the day is asthenopia common. This fact is borne out when it is stated that more than 50 per cent. of the office work of the oculist is the relieving of asthenopia; the same percentage prevails also in those of our hospitals and dispensaries that have eye departments. Another side of this is evidenced in the very numerous advertisements in newspapers and elsewhere of the so-called "refracting opticians," "optical specialists," etc. Shop signs of these specialists abound; their positiveness is alluring: "If you have headaches come in." "Astigmatism properly corrected." How unskilful is the fitting of errors of refraction by these "specialists," oculists generally could testify.

Cause.—The cause of this prevalence is also clear. With the overcrowding in our large city comes the keen competition for position and even existence, often requiring the application of the eyes many hours of the day and far into the night, and that at close range; bad enough in the daytime, but worse at night by artificial illumination. The same applies to children and youth during the school years, for overstraining and overuse of the eyes by too long-continued application to study and school work will cause eye-strain.

Varieties of Asthenopia.—First, the accommodative. All eyes, in order to see clearly at close range, must call into action the ciliary muscle: this muscle surrounds the lens, inside of the globe, and by its action causes a further convexity of the lens, so that objects may be properly focused on the retina. Hyperopes of any large degree also have to use this muscle of accommodation for distant vision, because of the formation of the eye; it is readily seen, therefore, why with this refractive error symptoms of eye-strain are so common.

The Muscular.—The act of accommodation is accompanied and assisted by the act of convergence, both internal recti taking part in it: if this convergence be long continued it is easy to understand that an overstrained muscle will rebel and assert itself; furthermore, if for this reason, or for some other, the balance or equilibrium between the extra-ocular muscles be upset, the symptoms called muscular asthenopia will be likely to follow.

The nervous, hysterical or *psychical* asthenopia must be mentioned, for it is also met with; if accommodative and muscular asthenopia can be excluded, or if after careful examination and correcting of these conditions, the eye-strain symptoms persist, the nervous variety may be suspected and should be treated.

The purpose of this paper is to confine itself mainly to the accommodative and muscular variety of asthenopia, using the office case book to illustrate and describe the symptoms resulting from these conditions. While age may be a factor, and asthenopic symptoms be prevalent before the age of forty years, yet it is not uncommon to have patients over forty years present themselves with asthenopic symptoms, that is, in contradistinction from presbyopia.

Conditions of the Eye, Producing Eye-strain Symptoms.—In simple hyperopia they are common; in hyperopic astigmatism they are usual, and in compound hyperopic astigmatism they are the general rule. The severity of these symptoms, of course, depends on the amount of use and strain of the eyes.

In myopia, with the exception of the reduced distant vision—which is not to be called an asthenopic condition—eye-strain is not met with; with myotic astigmatism eye-strain symptoms are noticed, and also with the compound variety. The large majority of cases are those with hyperopia, with or without astigmatism, because it is in these cases that the accommodative act is so continuously required.

The Muscular.—This is a loss or upsetting of the equilibrium of the extrinsic muscles of the globe. These muscles bear, or are supposed to bear, a certain definite relation to each other, as to their action and power to roll the eye in one direction or another. If this power be disturbed it will manifest itself. Many of the symptoms to be mentioned are present in either or in both of these varieties.

The great relief resulting from the wearing of properly fitting lenses is a source of extreme gratification both to the patient and the oculist; that this may lead to overenthusiasm can be understood—to find that asthenopia is at the bottom of all the ills which flesh is heir to, is not a common experience with oculists. That it may be a factor in epilepsy is granted, and that partial relief from this condition often follows a proper correction of the eye conditions present is also granted; but that amelioration and cure of mental states or diseases follow lens or operative corrections of asthenopia is not a common experience. The scope of this paper is broad enough, but the time allowed for its reading makes it necessary to be brief.

Sex does not enter materially into the diagnosis; temperament does, however, and age is a factor, as most sufferers from eye-strain are

* Paper read at Annual Meeting of State Medical Society, January, 1904.

under forty years; and growing school children frequently complain.

Headache is a prominent symptom; pain in different parts of the head and in the eyes. This is of different kinds and varying intensity; at times sharp and shooting, at other times dull and throbbing; the temples and forehead over the eyes are favorite seats of pain; again, all over the frontal region and extending on either side to the temples; pain may be on top of the head and extend backward to the occipital region. If the ache be in or near the eyes it is generally due to the accommodative variety of this error—if further away, to the muscular; but it may not be always possible to distinguish the one from the other. These headaches are liable to come on in the afternoon and are carried through the evening and to bed, to be followed by relief in the morning. This ache is positive, intense; one case is recalled: the child came home from school with this pain and had to go to bed; this was followed by a vomiting spell; relief came in the morning. Several recurring attacks of this nature were relieved, and in time cured, by wearing proper lenses.

Blurring of Vision.—This is a common symptom both for near and distant vision; it happens that while looking at an object, suddenly all becomes blurred and blank before the eyes; or objects become indistinct, requiring a closing of the lids for a time, or the rubbing of the eyes to bring back clear vision: this condition is due to a sudden, though only temporary, failure of accommodation, that is, the ciliary relaxes, the lens becomes flat and vision is indistinct. Some call this "dizziness," some "swimming before the eyes." After a short rest the ciliary regains its tone and clear vision returns. When this is a prominent symptom the sufferer often becomes aware of it before its actual onset and can anticipate it by a short respite from work. This is often observed after some systemic disease, such as grip or typhoid fever; for in common with other muscles the ciliary participates in the general lack and loss of muscular tone and vigor. This condition must not be confounded with the paresis following diphtheria. Here there is a distinct nerve enervation, in asthenopia there is only a momentary loss of tone, inconvenient, to be sure, but only the symptom of a condition, not of a disease. Blurring of vision asserts itself after a continuous use of the eyes; thus in the morning it is uncommon, but is experienced toward the afternoon and early evening, particularly by artificial light. Under this head must be mentioned inability to see the blackboard work distinctly, so often complained of by students, old and young. Excluding a myopic state and poor illumination, this is due to a refractive error that the ciliary is not always or continually able to overcome.

Lacrimation.—Watering of the eyes is often a prominent symptom, and is probably reflex in its nature, due to an irritation of the tear-gland as a result of the eye-strain; excluding acute or chronic inflammatory conditions that cause lacrimation, there is an overproduction of tears: as they flood the conjunctival sac and are not carried off freely the moisture runs over the edge of the lids and down the face, causing decided annoyance; often redness and injection of the superficial conjunctival blood vessels accompany this lacrimation.

Diplopia.—Double vision is a not infrequent complaint. In some instances the feeling is that the eyes are crossed without the diplopia, in others there is a troublesome diplopia. Here the balance in the extrinsic muscles has been upset; the internal recti being overused and overstrained, are weakened to such an extent that the externi have strength enough to pull the eyes slightly beyond the point where objects fall on both maculæ simultaneously, and thus cause diplopia. This is not constant and does not produce an apparent squint unless of long duration. It is proper, however, to mention here that a decided squint is in a certain proportion of cases the direct result of an error of refraction.

Lid conditions should be mentioned.

Spasmodic twitchings of the lids come on without warning, and for a few seconds or longer the patient experiences muscular contraction of the levator or of the orbicularis, at times of both, alternately; a rapid, jerky spasmodic movement ending abruptly, to return again at uncertain intervals. A slight rubbing—massage—of the lids with the fingers will usually quiet this twitching.

Pinching of the eyelids is often met with, done either to increase vision or to accentuate it—astigmatics early and easily learn of the value and help of this act and practice it to increase and sharpen vision.

Blepharospasm.—It is readily seen how from a long-continued twitching of the lids or the pinching together, a condition of blepharospasm may result, while in most instances it is due to other causes—generally corneal—yet at times is encountered as a direct result of asthenopia, and is one of the hard things to overcome in the treatment of eye troubles.

Inflammatory conditions must be mentioned, as certain of them result from eye-strain, usually of the refractive kind. If bad hygiene, poor or malnutrition, rheumatism, gout and other diseases which are manifestations of the results of faulty metabolism, have been eliminated or recognized and cured, and the condition still persists, relief and cure of these symptoms promptly follow the correction of the asthenopia.

Blepharitis Marginalis.—An inflammatory condition of the lids in which the edges are red, somewhat thickened, and the seat of fine scaly particles or even crusts. If this persists there may be loss of some of the eyelashes—the picture presented being a peculiar one.

Hordeolum or Sty is an inflamed Meibomian gland; one attack is liable to be followed by another; painful, causing a swelling at the situation of the gland and often considerable swelling of

the lid, usually breaking down and relieved by the discharge of the pus.

Chalazion.—While not always an inflammatory condition, is also so frequently associated with an error of refraction that it may be mentioned as a result of asthenopia—the characteristic hard round swelling in the lids, rolling under the finger, not painful unless inflamed, which is rare, and gradually increasing in size. With proper correction and regular massage, relief may be expected.

As this paper must be brief and concise, some things have been left unsaid; while those said might have been elaborated; and if nothing startlingly new has been advanced there is also nothing uncertain put forward.

The purpose of the paper is to call renewed attention to a very prevalent condition, namely, asthenopia,—to its causes, manifestations and, most briefly, to its relief. Also, that many who are the sufferers from this asthenopia are induced by alluring and misleading statements to apply for relief to those who are unfitted and unqualified to treat them; how much these inefficient practitioners are on the increase is everywhere apparent. Relief from this state of affairs is needed. May the time soon be when the practice of medicine will be limited strictly to those who, by education and experience, are legally qualified to pursue it.

139 East Forty-sixth Street.

SOME CONSIDERATIONS IN THE TREATMENT OF TUBERCULOSIS OF THE TESTICLE.*

BY JOSEPH A. BLAKE, M.D.,
OF NEW YORK.

I HAVE been asked by your chairman to start a discussion upon tuberculosis of the testicle. As practitioners we are chiefly interested in the treatment of this condition, and consequently I have decided to limit myself to the expression of my views on the subject. In apology I may say that I have been unable to obtain the subsequent history of my cases as fully as I should wish in the short time I have had at my disposal.

My experience has been somewhat limited. I have at hand the histories of eight cases operated upon by castration with removal of the entire vas deferens in all, and in two with simultaneous removal of the seminal vesicle. In one case double castration was performed. I have never performed epididymectomy alone. In all cases the disease was restricted, as far as could be ascertained, to the genital apparatus, with the exception of one case previously reported to this section, in which, in three successive operations, I removed the kidney, ureter, left testicle, both seminal vesicles and most of the prostate. It is now nearly three years since the last operation on this patient and he is practically a sound man, having almost entirely recovered from the cystitis which accompanied his other lesions.

* Read before the Section on Genito-urinary Surgery, of Academy of Medicine.

The other patient from whom I removed the seminal vesicle with the vas and testicle was operated upon six weeks ago, and I have brought the specimen, since it shows extremely well the manner of extension from the testicle to the seminal vesicle often observed in these cases. You will observe that the disease has not extended continuously along the vas, but that, with the exception of two or three nodules at the distal and proximal portion of the vas, the remainder is free. This patient also had deep strictures necessitating a perineal drainage of the bladder, but he has been back at work for two weeks, his wounds being entirely healed before he left the hospital. None of the remaining cases have been followed, but none have returned for further treatment.

Returning to the consideration of operative treatment, since it is generally conceded that tuberculous foci in these organs should be extirpated unless in the presence of extensive tuberculosis elsewhere, we may classify the questions arising in the following order:

1. *Regarding the Nature of the Operation.*—(*a*) Whether castration or epididymectomy; (*b*) as to the amount of the vas deferens to be removed; (*c*) as to the removal of the seminal vesicle when involved.

2. *Regarding the Operative Technic.*—(*a*) In excision of vas deferens; (*b*) in excision of seminal vesicle.

Castration or Epididymectomy.—When both testicle and epididymis are involved, there is no question. Castration is the proper operation. When the epididymis alone is involved, many men of large experience advocate epididymectomy. It is extremely difficult to obtain trustworthy statistics upon the efficacy of this measure, particularly in regard to the question of local recurrence, yet one has only to glance over the reports of cases to find that not a few have a persistent sinus remaining or have to submit later to orchectomy. As I have already stated, I have never done this operation, possibly because I could not satisfy myself that the epididymis alone was affected. My preference is castration unless both sides are diseased, when I should leave one testicle if possible.

The gland is useless when the epididymis is removed unless for internal secretion and one testicle suffices for that. Horwitz states that he has not observed atrophy of the testes or diminution of sexual power after epididymectomy, but it is not clear that the cases observed were double operations. Nor is the length of time in which the cases were under observation after operation stated. In a man sixty-eight years of age, whom I castrated for enlarged prostate, when that operation was in vogue, sexual vigor with emissions was retained for nearly two years after the operation. If epididymectomy has no influence upon the sexual vigor, the fact is a strong argument in its favor.

The Amount of the Vas Deferens to be Removed.—In all my operations I have removed

the vas deferens with, usually, a portion of its ampulla. The importance of so doing is well illustrated by the specimen shown, and by a large number of reported cases in which the disease has skipped large portions of the vas.

The Removal of the Seminal Vesicle When Involved.—My opinion is that the infected seminal vesicle should be excised in every case in which the disease is limited to the genito-urinary tract, for the following reasons: first, that tuberculous foci in general should be removed as far as possible, and secondly, to prevent implication of the remaining testicle and the urinary tract. When we consider that in 50 per cent. and, according to some, 75 per cent. of the cases of tuberculosis of the testicle, the other testicle later becomes affected, we can appreciate the importance of eradicating the disease, particularly in the region of the seminal vesicles and prostate. Even after castration, according to V. Bruns, the other testicle becomes diseased in 23 per cent. of the cases. On the other hand the seminal vesicle is said to shrink away in a large number of cases when the vas deferens is removed (Horwitz).

Again, the operation for excision of the seminal vesicles is a difficult one and not to be lightly undertaken unless one is reasonably sure of his technic. In proper hands, however, when there are no other contra-indications its dangers are less than those of allowing the tuberculous focus to remain. In regard to the technic in operations upon the vas deferens and seminal vesicle, I have found the following method to be satisfactory:

In removing the vas with the testicle, the testicle is first excised with any skin that may be invaded, the incision is then carried up to a point opposite the internal ring and through the aponeurosis of the external oblique. The vas deferens having been separated the remainder of the cord is divided, and the vas being drawn upon the peritoneum is pushed away from it with the finger until it is freed down to the ampulla. A ligature is then tied about it as low down as possible, or it is evulsed, the finger of the other hand separating it at the ampulla. The wound is then closed, as in the repair of hernia. By this method a portion of the ampulla is generally removed with the vas. This method is usually preferred to that of Büngner, in which the vas is evulsed from the external ring. When I have removed the seminal vesicle, I have first excised the testicle and vas deferens in the manner described and have then attacked the vesicle through the curved perineal incision known as Zuckerkandl's. After freeing the dorsal surface of the prostate, the seminal vesicle is exposed by incising the layer of the rectovesical fascia binding it to the bladder. It can then be shelled out without much difficulty. At the same time any lesion in the prostate can be attacked and handled as its extent of importance may require.

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SOME REMARKS ON TUBERCULOSIS OF THE URINARY BLADDER.

BY ALEX. B. JOHNSON, M.D.,
OF NEW YORK.

TUBERCULOSIS of the urinary bladder usually occurs in combination with tuberculosis of other portions of the urogenital tract.

Among 35 cases observed by Casper in three the bladder was found to be the sole seat of the disease. In 14 cases the kidneys were also the seat of tuberculosis; in seven cases the genital organs; in two cases the joints; in five cases the lungs; in three cases general tuberculosis existed. In one case the patient was the subject of lupus.

According to Koch, the following modes of infection are possible:

(*a*) *In the presence of tubercle bacilli in the body*: (1) Infection through the blood current; (2) infection by way of the lymph channels; (3) infection by the excretion of tubercle bacilli through the kidneys with or without disease of these organs.

(b) Through the introduction of bacilli from without: (1) By cohabitation; (2) by catheterism.

Bladder tuberculosis presents itself to us clinically in most cases, as a more or less localized, occasionally diffuse process combined with tuberculosis of the kidney and ureter; as tuberculosis of the prostate and seminal vesicles, or of the epididymis and vas deferens. Such combinations are so general that many surgeons of large experience have never seen a case of tuberculosis of the bladder alone and not a few deny the probability of its occurrence.

As might be expected from the mode of infection, that portion of the bladder forming the trigonum and the parts adjacent to it are the most frequent seat of the disease. In advanced cases, however, a large part of the bladder wall may be involved. The lesions noted vary with the age of the process. In the early stage, localized swelling and congestion, such as we regularly see at the mouth of a ureter when the kidney is the seat of tuberculosis, are present. Later, tuberculous nodules of greater or less size occupy the affected area, and finally, tuberculous ulceration of characteristic form and appearance takes place and progresses with the formation of much cicatricial tissue. The organ becomes more rigid, loss of distensibility results and the capacity of the bladder may thus be greatly diminished. Mixed infection adds the lesions of other forms of cystitis.

The symptoms of bladder tuberculosis vary to the same extent with the seat of the lesion and are usually much complicated by the coexistent lesions in other portions of the genito-urinary tract. If, as rarely happens, the region of the trigonum remains free from disease the characteristic symptoms of bladder irritation may be slight or long absent. If the trigonum and vesical end of the prostatic urethra are involved the symptoms are marked. They consist of frequent

desire to empty the bladder and pain which is referred to the perineum, the course of the penile urethra, the glans penis and the sacral region. A severe spasm of pain usually follows the end of urination. The pain of tuberculous cystitis is severe and exhausting and many of these patients become addicted to the use of morphine. In advanced cases the misery of these unfortunates is pitiable in the extreme.

As a result of the local irritation, notably when the prostate is also involved, patients sometimes exhibit an abnormal activity of the sexual apparatus and may continue to copulate industriously, even when the disease is well advanced toward a fatal termination. Hemorrhage from the ulcerated areas may occur. The bleeding may be microscopic or so severe as to seriously diminish the patient's strength or even imperil his life. The intravesical bleeding may cause retention of urine of a painful and particularly distressing character. The condition of the urine will vary according to the presence of a complicating cystitis or a tuberculosis of one or both kidneys. The urine is usually acid, and if the kidney is also involved there will sometimes be polyuria and urine of a low specific gravity. The amount of pus in the urine will vary greatly and is scarcely to be relied upon as a typical diagnostic sign.

In nearly all cases tubercle bacilli can be demonstrated in the urine either at once or after repeated examinations. If the centrifuge be used it will very rarely be necessary to resort to the inoculation of animals to establish the diagnosis.

The general health of these patients suffers as is the case in tuberculosis of other organs. They lose flesh and strength and, if mixed infection is present, they will suffer from chronic septicemia accompanied by fever, night-sweats, loss of appetite and often from diarrhea. In such cases the pain is an important factor in producing deterioration of the general health.

Diagnosis.—Tuberculosis of the urogenital system is a disease of adolescence and young adult life. It may also occur as late as middle age but is rarely developed after the fifth decade. Men are more commonly affected than women.

When a young person comes to us complaining of painful and frequent urination, if he be a male we seek to exclude gonorrhea; if the individual is female, hysteria, a uterine displacement or diseased adnexa. If the urine is found to be purulent we further seek to exclude stone in the bladder or stone in the kidney. Search for tubercle bacilli will often demonstrate conclusively the presence of a tuberculous lesion somewhere in the genito-urinary tract. The testicles and vasa deferentia will often show the characteristic nodular enlargements of the epididymis and the thickened vas deferens. The finger introduced into the rectum readily tells us whether the prostate is hard and nodular and whether the seminal vesicles are increased in size and indurated. The tuberculous kidney is often slightly tender, although at an early stage of the disease it is rarely so much increased in size as to be readily palpated.

The cystoscope will then enable us to see the characteristic changes in the bladder, if such be present, but only too often we are able to see tuberculous disease beginning at the orifice of one or both ureters, indicating disease of the corresponding kidney. In fact, in by far the largest percentage of cases of bladder tuberculosis there will be such evidence of tuberculous disease in other portions of the genito-urinary tract, that we are obliged to regard the process going on in the bladder as of secondary interest from the point of view of surgical treatment. Not that the disease of the bladder is less serious or less important, but experience has taught us that until the other tuberculous foci have been removed we can do little for the bladder itself.

Treatment.—In many cases of beginning tuberculosis of the bladder the treatment consists in removing the complicating foci of disease in the kidney, the seminal vesicle, the prostate, the epididymis or the vas deferens as the case may be, and in letting the bladder alone. If the other foci of disease can be removed the bladder will often get well, provided the patient can be placed under favorable hygienic conditions, such as removal to a dry and equable climate, life out of doors, good food and the other measures which have been found useful in many forms of tuberculous disease.

If disease of other organs can be excluded it is my belief that general and hygienic treatment offers the patient a better hope of cure than any local operative measure. It is true that a few cases of tuberculous ulceration of the bladder have been greatly benefited and even cured by operative removal of the disease, but where one has been benefited ten, in my belief, have not, and a good proportion have been left with a permanent urinary fistula lined with tuberculous tissue. It has long been known that a bladder which is the seat of tuberculosis is often made worse by instrumentation, and the various forms of local treatment, so very useful in other kinds of cystites, usually fail to do good in cases of tuberculosis, and often do great harm.

There are those, however, who believe that improvement sometimes follows the periodical introduction of bichloride of mercury solutions into the bladder or the instillation of iodoform emulsion. The use of internal antiseptics in tuberculosis of the bladder is of doubtful value. Of the many used, creosote seems to bear the best reputation.

Certain operative measures may, nevertheless be called for in cases of bladder tuberculosis. In advanced cases the bladder sometimes becomes extensively diseased and greatly contracted. The sufferings of these patients are so intense as to be beyond endurance. Under such circumstances a permanent suprapubic opening made into the bladder for drainage may give great relief and is followed by marked improvement in the general health of the individual. In certain cases of severe hemorrhage from the ulcerated vesical

mucosa a suprapubic incision into the bladder, for the purpose of controlling the bleeding, may be called for. Under such circumstances the surgeon might properly proceed in one of several ways, according to the condition found. If an ulcerated area not involving the orifice of the ureter exists it might properly be excised and the wound closed by sutures. The curette and the actual cautery might be employed to destroy the base of the ulcer. If the orifice of the ureter is the seat of disease the kidney on that side is probably tuberculous and will perhaps require removal. The cautery might then be cautiously used for the control of bleeding preceded by the use of a curette. If the bladder is still in fairly good condition an effort should be made to close the wound, else a permanent tuberculous fistula will almost certainly result.

In women access to the bladder through the urethra is comparatively easy and in cases where the kidneys were not involved a number of surgeons have reported favorable results from curettage, cauterizations and applications to the diseased bladder made through a speculum. Such treatment may be tried preparatory to the hygienic measures before indicated, or even where such hygienic measures cannot be carried out.

My conclusions, however, in regard to the treatment of tuberculous cystitis are as follows: (1) If other tuberculous lesions of the genito-urinary tract exist their operative removal is sometimes followed by improvement and even cure of the process in the bladder, provided the patients are placed under the most favorable hygienic surroundings. (2) Operative treatment of the bladder alone in the presence of tuberculous lesions of other portions of the urinary tract is usually harmful rather than beneficial. (3) The local treatment of the tuberculous bladder by means of injections or applications through the urethra is generally useless and often very deleterious. (4) The internal administration of the drugs known as urinary antiseptics is generally useless. (5) Palliative operations, such as suprapubic drainage, may be useful in advanced cases. (6) The general or hygienic treatment, suitable climate, out-of-door life, etc., offers these patients the best hope of recovery. (7) Such hygienic measures should be preceded by the operative removal of tuberculous foci in the kidney, the epididymis, the prostate and the seminal vesicles if such exist and the patient is still in sufficiently good condition to bear the operative procedure. (8) In those rare cases where the bladder alone is affected over a moderate area only, the operative removal or destruction of the diseased tissue may be followed by improvement and even cure.

Typhus among Germans.—Capt. Dannhauer, correspondent in German Southwest Africa of the *Lokal Anzeiger*, cables from Windhoek that the number of soldiers suffering from typhus fever in the hospitals at Otjihaenena, Windhoek, Okahandya and Karibib is 175.

A FEW CONSIDERATIONS CONCERNING THE MECHANISM OF DEVELOPING MENTAL DISORDER.

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HOWEVER convenient the distinction between "health" and "disease" as applied to opposed groups of phenomena, the physician who aims at early diagnosis and prophylaxis must recognize the fact that as distinct principles or entities neither has separate existence. More than a century ago Bichat, in expressing the relations of pathological anatomy to clinical medicine, used the following words: "It is not alone the science of these changes which primarily or secondarily develop gradually in the course of chronic disease; it includes the examination of every alteration to which our parts are subject, at whatsoever period of the disease." Three quarters of a century later Claude Bernard, in developing this conception along physiological and clinical lines, said, "Between any form of disease and health there are only differences of degree. No disease is anything more than an exaggeration or disproportion or disharmony of normal phenomena." From Bichat's time to the present—indeed, most markedly in the recent achievements in chemical physiology and chemical pathology do we trace the further development of this conception.

In no particular field, perhaps, is the relativity of disease and health more apparent than in psychiatry, although the almost universal acceptance of this view has not prevented the criticism by most laymen, many physicians, and courts of law quite generally, that in the determination of the existence of mental disorder we are prone to confound health with disease, and *vice versa*.

The study of the mental aspect of man can not be separated from that of his bodily functions; and mental disorder is to-day inconceivable except as a result of defective organization, perverted nutrition, or alteration in structure—with consequent disorder in functioning of the complex organ which immediately supports it, or of change in remote organs which minister to the brain's nutrition. We cannot always correlate observed nervous and mental phenomena with cell changes or their complex metabolic activities; nor is it reasonable to expect—from their peculiar nature—that we can ever attain the final explanation of morbid psychic phenomena in constitution of nerve cell. It is not too much to say, however, that we are beginning to understand how they may have their origin in nutritive changes which modify and interfere with the cellular mechanism upon which the highest cerebral function—the process of "associative memory"—depend.[1] We have increasingly accurate knowledge of this last named function and, with it, of the order and mode of development, that is, the "mechanism" of mental states whatever their character. Our present-day insight into the nature

of these inner processes, of their connection and interaction with the physical and chemical processes of the human organism is, in large part, psychology's contribution to the sum total of science, and its practical value to medicine cannot be over-estimated. A glimpse into this mental mechanism is essential to a clearer comprehension—not only of the early morbid manifestations of mind, but of the latest and most unmistakable symptoms of insanity as well. In this paper it is with the former aspect that I shall more particularly have to do; attempting to indicate the "gross anatomy," as it were, of evolving mental disorder from ideas and emotions which, with associated states of the organism, must be regarded as earlier phases and requisite preconditions to the clinical entities we commonly term insanity.

Insanity is advanced mental disorder marked by characteristic psychic symptoms. It is exhibited in conduct or action; this, with the frequently accompanying phenomena of illusion, hallucination, or delusion, is to be regarded, in the vast majority of instances, as merely the latest episode in the most recent chapter of the patient's history. "The lunatic's horrifying visions, panic fear, profound depression, and delusions of persecution are all constructed from the material of daily fact." From the earliest subjective symptom of disturbed or perverted sensation and perception, through morbid idea, impulse, emotion, obsession, and the more marked dissolutive phenomena of hallucination and delusion, to the final culmination in violent deed, there is a correlated series of psychic events having no sharp definition of the morbid from the normal. In their gradual transition, however, there are symptoms so distinctive of the mind's morbid functioning that they clearly foreshadow the more serious mental disorder into which they may at any time develop under favoring circumstances of exhaustion, toxemia, intoxication, or stress from any cause whatsoever.

Early slight deviations from health can be fully appreciated only through an understanding of the normal mental mechanism, and for this there is necessary a knowledge—not only of the general physical and physiological substratum upon which their development is conditioned, but of the "peculiar" manifestations of mind, the products of brain functioning. These, the most "personal" matters of the patient's life, are the images or materials of which the mind is composed; the individual sensory experiences and habit of associating and combining these into ideas, judgments, and beliefs; his intellectual preoccupations; his feelings, impulses, interests, personal passions, and special or characteristic mode of reacting to environing circumstances as determined not only by their nature, but by peculiarities of organization as shown by resulting ideas, emotions, and tendencies. Previous happenings in the individual's mental life are here of equal significance with those which pertain to his physical organism when considered in their relation to bodily diseases. And morbid mental states are only elucidated when thus viewed in relation to earlier psychic activities. The earliest indications may appear inconsequent to us because of our ignorance of the laws which govern their development, but this is no excuse for excluding them from our notice or allowing them to pass unheeded.

It cannot be urged that in thus considering idea, emotion, and impulsion, that we are dealing with something vague and intangible; all this they may be in the sense that they are not material, yet, as present to the patient's consciousness and *tending to material expression in attitude, word, or deed;* and as influencing life and its organic processes—as well as being the highest manifestation and result of it—we cannot consider them apart from the life of the organism as a whole. The modification of psychic events, when encountered as accompaniments of defective, perverted, or diseased states of the organism, are therefore as real as any facts with which the physician (as well as the psychologist) has to deal.

All mental development is dependent upon sensation; that is, upon transmission to the brain of the special sensations of sight, smell, hearing, taste, and touch, as well as of the innumerable muscular and organic sensations which stream into the sensorium informing the nerve centers of what is going no in the various outlying regions of the body. With normally developed sense organs and cerebral cells, with their connecting fibers, such impressions are associated in memory and fuse, combine, and organize into images and various combinations of images in accordance with laws which further govern their association, inhibition, and tendency to final transformation into action.

The expansion of sensations—the materials of the mind's growth—into images, and from these into the most complex combinations of images, is made possible by the marvelous complexity of the underlying brain mechanism. In receiving, combining, fusing, and associating these innumerable sensations there are impressed upon them certain characteristics depending upon peculiarities of the individual brain organization. Whether received, retained and associated, or recalled in normal or morbid manner, the sensation, image, or idea seeks to escape as movement; in this not only resembling, but following the law of all neural action; that is, first sensation, then movement. And just as the simple reflex varies in amount or intensity, depending upon the character and strength of the sensation or impulse and the varying conditions of sensory organ, conducting fibers, and receptive centers, so in the very complex psychic sphere we encounter variations, perversions, and disturbances depending upon the intensity or duration of the stimulus and condition of the receptive sensory, and of the higher inhibitory centers. While the final result in motor or secretory manifestation is primarily referable to the original stimulus (sensation), the defective, excessive, or disproportionate reaction must be

regarded as due to abnormal conditions in the underlying reaction organ—that is, the brain.

In the mind's upbuilding or associative process by "the delicate interlacing of the strands of experience in the composite pattern of the mental tissue" sensation is the essential and earliest element. In dissociative or disorganizing processes we look to the sphere of sensation (with its psychic equivalent—idea) for the earliest indications of mental disorder: for alteration or modification of previously known opinions; or impaired capacity for judging; these are usually revealed by careful search, whether the disorder originated in distant or outlying parts of the organism or in the complex sensory areas of the brain. The symptoms, in all their apparent disorder—from the earliest "sensory ingredient" and its more complex counterpart, idea, to final expression in movement, that is, in physiognomy, attitude, word, or deed,—present a definite order and uniformity, with variations depending upon differences of original constitution and "experiences" of the organism which manifests them.

It is a fundamental principle of psychology that every idea has a tendency to be transformed into action. Amid the multiplicity of our ideas but few result in action, however, because of the antagonizing or inhibitory influence of the many other ideas simultaneously present in consciousness which rob them of their impulsive power;[2] these latter, we say, result in inhibition of movement, hence the law as more generally stated that "every idea results either in movement or in inhibition of movement—in action or its reverse." Any one of the innumerable acts of our daily lives illustrates the operation of this law. Whether it be the complex muscular movements of our professional activities or the simplest manual tasks, fixation of the attention upon the matter in hand is necessary for their performance. There is thus a narrowing of the field of consciousness; the ideas involved encounter no opposing ideas and the appropriate movements follow of necessity and as inevitably as those of any reflex act. If the combination of movements in any particular act has become habitual, owing to the increased permeability of the nerve paths through such frequent repetition of the act, attention becomes superfluous and, according to the general laws of brain-habit, the most complicated muscular movements, once inaugurated, are performed without the necessary intervention of attention, or indeed, of consciousness. And so in the sphere of the emotions: at first consciously entertained, and perhaps with adequate exciting cause, they may, through frequency of repetition, long duration, or morbid intensity, attract all the forces of the organism; with the field of consciousness so narrowed that no conflicting ideas or emotions are interposed they become translated into action with clear consciousness; with blurred states of consciousness (the rule under stress of emotion and passion); or without any intervention of consciousness whatever, as so constantly noted in the outbursts of fury of the imbecile and epileptic.

Among the countless images of which the human mind is composed and which differ with the degree of culture and the experiences of the individual, there is unceasing change and variation. Indeed, clear consciousness for the individual exists only upon condition of such change and of continual renewal through varied sensations and emotions. So essential is this to healthy mental life that "capacity for change"—that is, ability to transfer the attention to a variety of objects—is one of the evidences of normal mind.

With all this multiplicity and variety of mental images and ideas we look for some order or system; and this we find in the trend of habitual lines of thought and in conduct as determined by emotions, inclinations, and appetites. "Human character" is but the result of organization or association of the sensations, images and ideas resulting from experience, in a manner which harmonizes with the emotions and desires of the individual. In all characters, however, conflict of these forces constantly occurs; but, depending upon the intensity of opposing ideas and emotions, a variable degree of "control" is manifested. "Stability is a term used to designate the degree or vigor of the controlling and coordinating functions which measure the individual's power to guide or quell emotions, appetites, and inclinations and make them subsidiary to healthy life. To do this is to modify such emotions by association with a complicated system of ideas. Ability to do this presupposes a capacity for seeing things in their normal relations—for giving events their proper importance and significance. Now the very essence of morbid states of mind consists of an inability to see things in their true relations and signifies a lessening of the ability to think or reason logically or with normal rapidity. There is disorder, perversion, or defect of the highest and most complex intellectual faculties; a break in the continuity of the mental processes; a narrowing or retrenchment of the field of consciousness with proportionately increased tendency for the dominating idea or emotion to be transformed into action. It is to the mechanism of this limitation or narrowing of the field of consciousness that we must look for explanation of the "change in character" and "weakening of the will," which terms have been used to indicate alteration in all that were regarded as highest and most complex in man's mental organization.

It is clear that what were regarded as manifestations of "will" are, in reality, *the results of will;* that is, of choice as manifested in words, behavior, and deeds. While these acts of choice never reveal the total secret of mind, they do represent the final outcome of its complex processes—conscious in part, but for the most part unconscious—and, as the resultant of all the higher faculties, they become indices of character, that is, of organization or association with some unifying principle of the sensations and images resulting from experience.

"At the threshold of all action lie reflex, instinctive and impulsive nervous tendencies."[3] Will,

or volition is but the highest form—the psychic equivalent—of physiological inhibition so universally an attribute of the highest and most complex centers. In the normal exercise of its function it distinguishes man from other animals in the degree to which he can control, regulate, or inhibit lower instincts, emotions, tendencies and habits. In morbid mental states the narrowing of the field of consciousness is equivalent to removal, or lessening of this higher inhibitory power as represented by opposing ideas and emotions.

As an illustration of narrowed field of consciousness due to impairment of associative memory from physical causes, I borrow one that is familiar to all—a physiological rather than a pathological one: Under the influence of fatigue or exhaustion we frequently have a sense of limitation of our energies and, at such times, experience a perceptible difficulty in thinking or reasoning; there may be a hesitancy in making decisions and in assuming responsibility. There is a failure of the judging or comparing faculty, and it is with difficulty that we see things in their true proportions. After food and adequate rest our exhausted organism recuperates and the normal equilibrium is reestablished.[4] In the bodily sphere this condition of exhaustion, if prolonged, is manifested in further depression of the vital forces—a condition which we habitually regard as furnishing the requisite soil for the development and operation of all exciting causes of disease—bacterial and otherwise. So in the psychic sphere it supplies conditions in which all sorts of undisciplined impulses develop and manifest themselves; the various modes and passions, such as anger, jealousy, suspicions, dreads and fears.

Careful investigation into the mental phenomena of "fatigue" reveals the fact that the predominance of any particular idea or class of ideas is based upon an emotional state which, vague and indescribable though it may be, is found to determine what ideas shall and what shall not occupy the attention. All attention normal, as well as morbid, is found to be based upon emotional states. We know that images and ideas as organized into opinions and beliefs are, with none of us, solely matters of carefully rationalized judgment, or products of purely logical processes, but at bottom they are largely matters of feeling as determined by peculiarities of organization, early training and surroundings and immediate or remote interest (Royce). So markedly is this the case that it may be stated as a dictum that it is to man's instinctive and emotional nature that we must look for both the mass and momentum of human conduct. Organic (bodily) sensations very clearly enter into this emotional background which plays so important —even dominant—a part in our make-up and in guiding and directing our mental activities. Ordinarily, that is in health, this influence is subconscious; it operates beneath the surface. In disease, however, it is not only brought more vividly into light and so is the more readily studied, but is often the chief characteristic, as well as one of the earliest symptoms of mental disorder. Because of its intimate relations with developing morbid ideas I shall briefly consider the double aspect of idea and emotion resulting from mutually influencing brain processes.

Exhaustion from any cause narrows the field of consciousness in the sphere of ideas by interfering with the activity of associative memory. Emotion narrows the field of consciousness by attracting ideas which harmonize with the particular emotion. Whether exhaustion is temporary from overwork, illness, or toxic states of the organism, invariably are there concomitant emotional states which present themselves as the milder fears or apprehensions. Normally leading to conservation of forces through precautionary measures in the avoidance of further fatigue, exposure, excesses, etc., they are so far salutary in their influence. With the continuation of the cause, however, and especially if it is prolonged and severe, these normal apprehensions (fears) may imperceptibly shade off into the "trouble-bearing expectations" such, for example, as distrust and suspicion of the motives of others, unreasonable dislikes, or ideas associated with bodily aches and pains, the fear of illness or accident, the loss of property, and so on to "the thousand and one needless worries over the future which are simply providence for the morrow gone mad."

As the healthy individual reacts promptly from all causes of bodily disease, so the mentally stable react from causes of mental exhaustion and depression. Through the activity of the higher controlling and coordinating functions the lower emotional forces are held in check and so are prevented from entirely dominating the individual. But, just as we encounter varying degrees of susceptibility to all external causes of bodily disease, so we meet with a wide range of susceptibility to causes of mental pain. In contradistinction to those characterized as "stable" we encounter the "sensitive" or "unstable" who are exceedingly susceptible to emotional disturbance and in whom crises of emotion leave permanent imprints. Rarely met with where the nervous organization is entirely normal, in those of such neurotic constitution slight causes quite commonly bring undue results either in intensity or duration of the emotion (or both), and we see disappointment, grief and losses resulting in emotional states, either temporary or prolonged, which vary from mere passive joylessness, dreariness, discouragement and dejection, to active anguish, fear of eternal damnation and finally, absolute and complete despair. Whether engendered by exhaustion, defective nutrition of brain cell, toxemic states, or by ideas which gain entrance and attract harmonizing ideas, the process, or mental mechanism, is essentially the same in all and develops and propagates itself according to laws as fixed and inexorable as any which govern purely physical phenomena. Under these conditions one idea or one emotion among many

may not only be increased in vividness and intensity, but may be longer entertained until it finally besets, possesses or obsesses the individual. This is because, in the defective or exhausted state of the organism, it becomes increasingly difficult to marshal before the "mind's eye" the various and complex combinations of ideas by which the original idea or emotion is regulated or controlled. Any idea, with its accompanying or underlying emotion, may thus usurp the attention with varying degrees of intensity from that degree normally requisite to a proper understanding of events as they come within our sphere of interest to "the all-absorbing, compelling, and dominating idea which, like Macbeth's ghost, will not down."

Such retrenchment or narrowing of the field of consciousness results in more than mere removal of other conflicting ideas; "the idea attended to becomes intrinsically clearer to the patient at the same time that the other contents of consciousness are blurred and obscured. By the mere fact of attention it is aggrandized in importance and given intensity and vividness." It is through the influence of attention that all higher development is made possible. Fixed ideas and obsessions are merely the morbid manifestations of this faculty; examples of what obtains everywhere in the mental sphere—of variations, not so much in kind as in amount and degree; they are examples of morbid physiology shading off into pathology. When we are confronted with this involuntary dwelling of one's thoughts in a particular direction; when one idea or one emotion among many becomes so intense that attention is drawn exclusively to it and all other ideas or emotions are repressed or inhibited; when we have such marked retraction of the field of consciousness as that evidenced by the occurrence of obsessions, we may know that we have a morbid type of mind to deal with—a mind that "cannot escape from the bondage of its own processes" and, as indicating its peculiar mode of action, is a criterion of its abnormality.

Arising in the most complex intellectual sphere morbid and fixed ideas and obsessions are apt to be the earliest signs of mental abnormality or tendency thereto; they take their coloring from the intellectual life of the individual but—more than this—they serve as indices to the lower emotional tendencies upon which their development is conditioned and which, later, come more prominently into view. These earliest symptoms, however, consisting of ideas and peculiar habits of thought "confided only to the consciousness which experiences them," like subjective symptoms of disease in other bodily organs, become diagnostic data only when divulged to one who is competent to interpret them—the physician. But it rarely happens that even the medical adviser is made acquainted with these most personal experiences until, perhaps, the underlying emotional element is more prominently shown; this heretofore subconscious factor now becoming apparent gives something tangible—something measurable to deal with in the bodily expression of feeling as evidenced in physiognomy, attitude, words, and deeds, or in modifications of circulation, respiration, and the various secretions of the organism made manifest in their totality by the accompanying impairment of nutrition. These become accurate criteria of inner and otherwise hidden mental states, and are of just as great significance in diagnosis as are the physical and chemical modifications of the secretory and other processes going on within glandular organs. As in these latter we may know their results or processes without in all cases being able to separate the products into their ultimate constituents, so with emotions; though we do not yet know all the physical and chemical conditions under which they appear, we can observe the process of their determining attention to a given kind or group of ideas; their vivifying influence upon these; and their tendency, once started, to develop and propagate until all the forces of the organism are diverted to them, proportionately narrowing the field of consciousness and by so much increasing the tendency to resultant action.

It is a law in psychology that the more intense or vivid an idea the greater is its tendency to result in action. We have seen how an idea is vivified by the mere fact of attention. Attention becomes most potent in narrowing the field of consciousness when it is determined or reinforced by emotion; in other words, we see that most vividly (clearly) which arouses emotion or feeling. Because of the very multiplicity of our ideas but few attain degrees of vividness impelling to action because ideas not in keeping with our wishes, desires and inclinations are inhibited or kept in the background of consciousness; such ideas can readily be controlled. Very different is it when our emotions are involved; under these conditions, we have to do with something which most intimately concerns us—our material or social welfare. Emotion and passion—far from being controlled by ideas—not only determine, but control them. It is in this way that grief over the loss of someone near and dear may be the pivot about which all our ideas revolve; indulged to the exclusion of all other emotions, with the concomitant depression of all the vital forces, it can very soon assume morbid proportions, readily labeled as such by the mere fact of its entirely dominating the mental life of the individual.

Fear, suspicion, jealousy and anger, are emotions which readily assume a morbid aspect; they constantly precede, as well as accompany, certain forms of mental disorder; indeed, they furnish the "materials" for their development. I can best illustrate their diagnostic value by the recital of a few exaggerated cases:

Case I.—L. K. W., aged forty-five years, was admitted to the Western Pennsylvania Hospital for the Insane, June 21, 1901. Maternal granduncle and an aunt were insane. The patient has had nervous dyspepsia for years. The earliest signs of mental disorder were observed in June,

1899, two years prior to admission. At first unable to sleep, he next grew timid, and tried to avoid meeting strangers. Becoming fearful that he would lose his position, he soon manifested other fears—apparently the outgrowth of the former; one of these was that his family would come to want. He threatened to kill himself and also his wife and children, but has made no attempt to do so.

Under examination the patient was at first reticent but soon talked quite freely; telling in great detail, how, after months of rapidly failing health from long continued "stomach trouble" he began to feel timid and "afraid." At first vaguely "fearful of everything," he one day, conceived the idea when called on to sign his name in receipt of his week's wages he might forget how to write it. Fully appreciating its unreasonableness, this fear, nevertheless, grew upon him until he decided to quit work in order to spare himself the humiliation which such failure would entail. Unwilling to reveal to any one his reasons for such cowardly behavior, he now worried about the real trouble of curtailed income with its potentialities of poverty and want. Unable to control or modify the original groundless fear, despite its far-reaching consequences, his general state of fear and anxiety became augmented, and other fears developed and multiplied. Vaguely suspicious of all with whom he came in contact, his fears took the more definite form of threatened danger to self, wife, and family. He felt that for some unknown reason, he was followed by officers of the law; that he was accused of committing some crime, hence his threat to kill himself and his family in order to escape ignominy as well as poverty. Ending his story with the statement—"Doctor, you're the only one to whom I've told the fool beginning of this trouble"—he expressed the hope that treatment might help him in the effort to throw off such feelings, and to get well. With improvement in his digestive functions, and, consequently, in general nutrition, encouraging suggestion and employment of such a nature as to keep him continuously occupied, he made a good recovery and continues well up to the present time.

Case II is illustrative of the development of fears, at first slight and transitory, into a settled state of suspicion, fear, and ultimately, into varied delusions of persecution, with transformation into appropriate self-preservative action in the way of attack. J. B., aged sixty years, admitted March 3, 1902. His mother suffered with rheumatism all her life and died of "paralysis." A brother died insane. The patient has had "sciatic rheumatism" off and on for years. He has always been "sensitive and nervous." Seventeen years ago he suffered transitory attacks of fear. At first these were merely in the way of ideas temporarily entertained. After a night marked by terrifying dreams as of being caught and crushed by falling timbers, a sense of fear possessed him. He would feel afraid to cross a bridge or ride in a street car. These apprehensions soon passed, however, and he appeared perfectly well. In September, 1890, he had an attack of "nervous prostration" lasting several weeks. In this he walked the floor constantly, worried incessantly (about his troubles, real and imaginary alike) and, later, grew suspicious of those around him. At one time he refused a certain medicine because "it might poison him." Though apparently recovering from this attack he became at times morose and sullen. Never fond of company he now avoided strangers, and while living, in the main, an apparently normal life, morbid fears frequently beset him, manifested later in attitude, words, and deeds. In 1898 he entertained the idea (though himself a Knight Templar), that "the Masons wanted to put him out of the way." He at this time grew suspicious of his wife and children, and one day accused a daughter of coming into his presence with a concealed knife with which she intended to kill him. In September, 1900, he attempted suicide by cutting his throat, giving as a reason for so doing that "death was to be preferred to his constant torture." In December, 1901, he made an unsuccessful attempt to kill his daughter, afterward stating that a voice had been telling him to do it, and that for a long time he had resisted, but was eventually "compelled to act." In the two or three months intervening between this occurrence and his commitment as an insane patient, he manifested, in addition to his systematized delusions of persecution, innumerable fears, and ideas of suspicion. Every move on the part of those about him had some hidden meaning; a given look influenced his heart, his stomach, or sexual organs; the table and china decorations conveyed to him certain meanings; he was worked upon by electricity, X-rays, etc. These delusions accompanied by an attempt to act upon them together with excessive and almost constant motor agitation led to his committment to Dixmont, where he soon subsided into a quiet and apparently normal state. To the casual observer, he is a harmless, inoffensive and, at times, even interesting and entertaining old gentleman. His delusions of persecution have faded away but examination readily reveals the existence of habitually entertained fears, and obsessions or besetments, all in the key of suspicion and fear.

This case presents, as its earliest psychic symptoms, morbid fears entertained at intervals for years without being divulged to any one. Finally becoming more obtrusive, as well as more continuously entertained, they attract harmonizing ideas, and later, all sensations, both of special sense and organic, are interpreted by the light of such morbid fears and suspicions, progressing to their inevitable outlet in action.

The following case is one which so clearly illustrates progressive mental involvement, with gradual abrogation of the higher inhibitory faculties by reason of the accompanying clouding of consciousness, that I give it in considerable de-

tail. Long continued indulgence in alcohol results in the impairment of the highest intellectual faculties and finally, complete domination by ideas and emotions which are characteristically the result of this toxic agent. In the mechanism of its development it is typical—not only of the class to which it belongs, but of many forms of mental disorder. Viewed in the light of its cause, the earliest manifestation in jealous suspicion is not less significant as a symptom of developing mental disorder than is the latest outcome in attempted deeds of violence.

Case III.—L. J. (colored), aged forty-seven years. Was admitted October 8, 1902. Insane eight weeks before admission, he was confined in jail for ten days because of threatening behavior with a shotgun. He believed that a mob was going to lynch him and said that he was only defending himself from an attack upon his life.

A steady drinker for twenty years, he had shown no mental abnormality except when drunk (and then but the usual evidences of intoxication), until two years ago when he became very jealous of his wife, accusing her, when under the influence of whisky, of unfaithfulness to him. This only when drunk. Two months previous to his commitment, however, he constantly accused her of all sorts of things; he also seemed fearful of every one, and later, declared that certain people of the community intended to lynch him. He armed himself with a shotgun and threatened to kill any one who might approach.

Under examination the patient, in great detail, tells of long-existing deceit on the part of his wife; next of flagrant acts on her part. He then relates the story of an assault by a negro on a little girl in the community which was attributed to him (all imaginary). Detectives now watched his house day and night. He heard voices at every turn telling him to prepare for death. Knowing himself innocent of any crime he determined to sell his life dearly and accordingly made preparations for defense.

Since his admission there has been progressive development of his mental disorder, he spends his entire time talking by "echo-phone" to detectives, county officials, his imaginary accusers, and recently to President Roosevelt, who, he says, has appointed him to some high official position in Washington.

From a mass of available symptoms illustrating the psychic development of this case I give these rather meager details which mark the onset and the progressive involvement of his faculties.

In the expressed ideas of suspicion regarding his wife we have the earliest symptoms of his mental disorder, with accompanying and underlying emotions of jealousy as later evidence of an increasingly narrowed field of consciousness. The corresponding morbid emotions direct his attention to this phase of his conjugal relations, and he reflects upon all actions and words of the suspected wife; these are distorted by his perverted imagination and made to fit in with his suspicions. He sees that which he expects to see and all evidence to the contrary does not exist for him because his consciousness is filled with that which his feelings tell him must be so. Narrowed down to this one idea, with his attention constantly assailed by attitudes, words, and deeds, which (though entirely imaginary) are proofs to him that his suspicions are correct, we see their logical outcome in ensuing acts. He first accuses his wife, then threatens her with violence, which is prevented largely by the accidental shifting of his now multiplying apprehensions and fears to other objects. That the jealous suspicions of his wife were inspired—not by actual deeds on her part, but were entirely the outcome of morbid conditions within the patient's own organism, we have further proof (if such were needed) in the shifting or transference of his suspicions and fears to his less intimate environment. The fear of impending danger, so common in alcoholic cases, he now attributes to accusation of crime, the sexual nature of which is the mark of its being but a continuation and further progression of his earliest morbid ideas. With the increasing clouding consciousness we also see further attempt on his part to explain his emotions of fear and apprehension of danger; this eventuates in delusions. "People are down on him" because of his race. He is accused of a crime (imaginary) common to his race. For twenty years holding the respect of the community in which he lived, he deplores the fact that his previous good record now counts as naught, and he constantly broods upon this thought. With "fear of disesteem" as its origin we observe a progressive narrowing of his field of consciousness to this and harmonizing ideas, all of which are made to fit in with his emotional state, no inconsistent ideas coming to consciousness to counteract them. He is now unable to give events their proper significance or see things in their proper proportions. Sensory impressions are soon misinterpreted. All sounds reaching his auditory centers being transformed (by his imagination) into voices made by a mob gathering to lynch him. Moving shadows are spies and detectives who hound his footsteps. By this time convinced that his fears have foundation in fact he takes necessary steps toward protection from the dangers which threaten his life, and arms himself with a shotgun.

The development of grandiose delusions since admission to the hospital is the logical outcome of his reflecting on the earlier entertained ideas, images, and emotions of fear later evidenced by illusions, hallucinations, and delusions. His morbid reasoning (whether conscious or unconscious) being, in effect, that since he is made the object of so much notice and attention on the part of the world at large he must be a personage of importance; and adequate reasons are evolved by his diseased imagination to explain such persecution. At first falsely accused of crime and hunted by the officers of the law, and later, by the mob, he, for some unknown reason

(so he argues) must be an object of their envy, and reasons for this are gradually evolved in his disordered imagination. He now states that it was all due to the known desire of the President to appoint him chief over all the detectives in the United States. Great wealth and possessions come as the logical sequence of great authority. We thus see this last stage attained by progressive gradations. He, to-day, offers millions upon millions to any one who will release him that he may go about his most important business.

In concluding these superficial and incomplete, though lengthy observations concerning the earliest psychic symptoms of disordered states I would not maintain that defects of judgment, exaggerated emotional states, or impulsive acts always are evidences of mental disorder. My aim has been to indicate how—as products of brain functioning—they may become such, just as the products of other organs through their excess, deficiency, or alteration in constitution, may gradually shade off into pathologic character; and this even in response to their habitual, and normal stimuli: the disproportion between cause and effect, in such cases, is explained by the general condition of the organism, or to a certain disposition and peculiarity of the body cells favoring such change. The cause, in other words, is found in the patient's own organism. In like manner undue intensity (quantity or amount), undue duration,—disproportionate reaction to all causes of mental activity may assume pathologic significance.

We cannot subject the product of brain functioning to chemical and physical tests such as are constantly our measures of accuracy in the diagnosis of diseases of other organs, but we can painstakingly observe these outward indications of hidden mental states, while extending our search for the cause or causes of such deficient, excessive, or perverted reaction—not only to the latest, or apparent, determining cause of idea and emotion (with their motor equivalents), but to the history of the patient's own organism for data pertaining to the evolutionary period of the disease; to previous habits of thinking, feeling and acting—in short, to the mode of reacting to cerebral stimuli, whether general sensory, emotional or ideal. In a disease where the evolutionary period comprises the entire previous life of the patient—as well as the lives of his progenitors—we, as a rule, have little difficulty in obtaining such earlier incidents of history which, as parts of the records of defect, or of exhaustion, stress and strain, reveal peculiarities of the individual brain as a reaction organ and, to this extent, they are facts of clinical importance.

Of well-marked diagnostic significance, it will be seen that they are of even greater importance in their prognostic relations; for, just as the ugly scars and unsightly depressions in scrofulous necks evidence previous tubercular adenitis and the existence of vulnerable tissue with its well-understood and definite relations to pulmonary tuberculosis, so the early morbid activities of mind as revealed in moods, emotions, impulsions and obsessions, are criteria of mental vulnerability or instability. Occurring under adequate cause or as a result of exhaustion, acute disease, or transient toxemia, even in the robust and stable (who promptly recover), they are of vastly greater significance in those less well-endowed by heredity. Such are more apt to succumb—not only to the influence of exceptional upheavals or calamities of acute disease, grief and disappointment, but at those "times of order-making" normally characterized by change in the body's nutritive processes; the times of greatest functional activity therefore of relative stress and strain: I refer to puberty and adolescence, pregnancy, the puerperium and lactation and the menopause. Whenever occurring and whatever the cause the psychical mechanism is much the same for all despite the wide diversity in their manifestations.

The intimate relation existing between impaired nutrition of the nerve cell through exhaustion, intoxication, the toxins of disease, and the various neuroses and psychoses has been well demonstrated and its importance cannot be overrated. But it must be remembered that the human organism is something more than a receptacle or laboratory for the production of various poisons; that there is a mutually acting and interacting influence between the brain and the vegetative and organic functions which minister to its nutrition, growth and activity: The science of medicine, with its correlative branches, deals with the influence of these latter. But psychology has come to the aid of medicine in further elucidating the *manner* of functioning of this most complex organ, showing how impressions received from the external world through the various avenues of special sensation and of all the outlying organs of the body as well, are the "materials" or "ingredients" by which it expands; and also that, while thus developing it not only acquires its own particular manner of responding to stimulation from without, but further reacts upon the organic functions. "Our whole body in every instance resounds in every part to the variations of our brain activity, and the normal functioning of our organism depends in a large degree on the right work of these central stimulations" (Münsterberg).

The majority of all cases of fully developed insanity represent brains defective by heredity and made more so by repeated injury from toxins of chemical or bacterial origin, with inherent defect in associating and combining the ingredients (images) of the mind's growth. Having marked morbidity in their individual system of thought or ideation, the result of long-indulged emotions, it may be, which, however initiated, are later dependent for their continuance upon certain conditions of the organism; they gradually become related to all the mental forces of the individual; with habit stepping in to fix and, ultimately, to organize into a consistent whole such morbid ideas and beliefs, the very origin of which may

be forgotten. As the disorder progresses the higher faculties are bedimmed and clouded; special sense impressions fail of correct interpretation, or rather, are interpreted in the light of the prevailing emotions, and phantoms, or fictitious objects, dependent wholly upon the fancies, fears, and suspicions of the disordered brain which conceives them, are projected into the outer world where, as illusions and hallucinations, they become to the sufferer further proofs of existing cause for said morbid emotions. Thus vivified and accentuated, and with higher inhibitory factors abrogated, they become translated into appropriate deeds upon the slightest, and often quite accidental, determining circumstances. That which at first existed merely as a proneness to a certain mental attitude we constantly see thus transformed into an irresistible tendency evidenced in disordered conduct. This is the essence of insanity.

Our relative helplessness in the presence of fully developed mental disorder is explicable in the light of our knowledge concerning its psychical mechanism. Appreciation of our limitations in psychiatrical practice prevents us from making useless attempt to regenerate the idiot and imbecile; that is, to repair destruction or damage of neural tissue sustained before birth, or before the evolution of the mental faculties in childhood. But at the same time it leads to more painstaking efforts on our part to develop by special education the remaining spark of mental life in those who are thus congenitally defective. It also results in a keener appreciation of the varying degrees of vulnerability, and of the truth in the observation that "the greater the inherited or congenital defect or weakness the more easily does the organism react to the evil influence of a bad environment, and the more hopeless will be the efforts to raise it to the normal."

All available evidence of morbid brain functioning, whether manifested in idea, emotion, or act, becomes of clinical importance, and by so much enables us the better to exercise that highest function of our art—of guiding the vulnerable individual through periods known to be fraught with danger to such an imperfect organism. Revealing "the weak link in life's structural chain" these earliest indications are of the greatest importance from the standpoint of prophylaxis. In the early stage—while the disturbance is "functional"—we may hope to accomplish much through removal of the exciting or determining cause, whether this is exerted through other links, as of overworked or defective organs of special sense—the "tools of the mind"—excessive expenditure of physical or mental energy, emotional stress, or poisons and the toxins of disease known to expend their injurious influence upon the delicate structure of nerve cell. And it is not too much to say that in this stage we can, in many instances, prevent the development into graver mental disturbances, from which they differ, not so much in quality as in degree.

Prevention, which is always paramount to cure, is thus seen to be most important where the psychoses are concerned. Indeed, in a large proportion of cases the one hope lies in prophylaxis, and this is only accomplished by early diagnosis, which depends upon recognition of the abnormal nature of idea, emotion, and impulse, together with a study of the condition of lowered resistance under which they develop. Whatever their origin it is through their interpretation by the light of the laws which govern the mental movements that these earlier slight indications become instinct with meaning to the physician, as well as momentous for the future welfare of the patient.

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THE AMMONIUM SULPHATE METHOD OF STERILIZING CATGUT.

BY WELLER VAN HOOK, M.D.,
OF CHICAGO.

THE claims of the Claudius method of catgut sterilization by prolonged immersion in iodine solution, which I tried on account of its simplicity, have not been substantiated in my experience. The catgut has not an agreeable handling quality and often becomes fragile after prolonged storage. Moreover, while we may not doubt the statement of conscientious, trained and able observers that the iodine catgut is sterile, we have a comforting sense of perfect security in using a suture material that has been subjected to the action of boiling water. For these reasons I have returned to the ammonium sulphate process of Elsberg with such satisfaction that I feel it my duty to commend it.

The simplicity and convenience of this method are such that any nurse can carry it out. For more than two years I have employed it with the utmost satisfaction, entrusting the details to the operating-room nurse. A number of my colleagues have successfully used the material prepared under my direction. The method depends upon the principle, as stated by Elsberg (*Centralblatt für Chir.*, 1900, p. 537), that organic substances are insoluble in the fluids by which they are precipitated from their solutions. A saturated solution of ammonium sulphate answers these requirements, and Elsberg has shown that the boiling of catgut and other organic materials in such solutions for a period sufficiently long to insure sterilization does not seriously affect their surgically desirable qualities.

The weakening of catgut by sterilization is of serious import. I have found that slightly chromicizing the material before sterilization prevents it from weakening and softening, and yields a product more easily handled and tied. After exhaustive tests extending over more than two years, the product being used by myself in hundreds of operations at Wesley Hospital, the fol-

lowing routine of selection and preparation is warmly recommended:

At the outset a catgut of unimpeachable quality must be chosen and the surgeon will do well to arrange for a continuous supply of uniformly reliable material. It should not have been weakened by bleaching or polishing. Select raw, rough, unbleached material. Soak for a week in pure ether or a mixture of chloroform one part and ether two parts. Wind on glass spools in single layers. Soak for three days in aqueous solution of chromic acid, 1 to 1,000. Boil for twenty minutes in water to which, while boiling, chemically pure ammonium sulphate has been added until the crystals cease to dissolve. Wash the catgut for half an hour in cold sterile water. Store as desired. I place the spools in a solution of corrosive sublimate, one part in ninety-five per cent. alcohol, one thousand parts. Should the material become infected, it may be reboiled.

A SEVERE CASE OF MAJOR HYSTERIA (TRAUMATIC NEUROSIS) FOLLOWING AN ACCIDENT; RECURRENCE OF SYMPTOMS AFTER A SECOND ACCIDENT; ABSENCE OF DAMAGE CLAIMS IN BOTH INSTANCES.*

BY THEODORE DILLER, M.D.,
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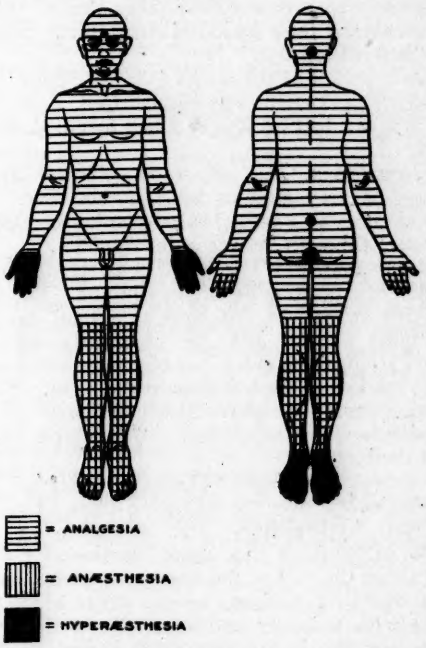
THE following case of major hysteria is, I believe, worthy of note for two reasons: First, because of an unusually interesting array of clinical symptoms, among them high fever, subnormal temperature, greatly accelerated respiration rate with practically normal pulse. Second, because the symptoms originally followed and are doubtless to be attributed to an accident, and recurred after a second accident; and because there were no grounds for damage suits, which were not entered.

It is often quite glibly said of a patient suffering from hysteria or neurasthenia (or both) which follows and results from an accident and where damage suits are brought, that the symptoms would not have occurred if there had been no ground for suit, or else that they would have soon subsided and that they will quickly, if not instantly, disappear after damages have been awarded and paid. This attitude, which is common to defending attorneys and to many physicians, does, I believe, a great injustice to many who suffer from hysteria and neurasthenia following an accident.

I think that there can be no doubt whatever that the symptoms of such patients are commonly exaggerated, both consciously and unconsciously, by a pending damage suit; and that improvement is greatly hindered by a pending suit. I further believe that the rate of progress toward recovery is often greatly accelerated by the settlement of a damage claim; although an instance of a complete and instantaneous recovery of which so much is heard, has never come under my observation. The psychology of all this is easily explainable, but need not detain us here.

To illuminate this subject, two sets of observations are badly needed. (1) Of cases of hysteria and neurasthenia resulting from traumatism where no damage claims are made or financial benefits expected to accrue therefrom. (2) Detailed accounts of the post-settlement course of such cases.

The case to be reported is a significant example of the first-named variety of observation. In a later communication I hope to contribute something to the second.



My case is as follows: A single man, a bridge inspector, aged twenty-two years, was admitted to the Allegheny General Hospital on July 14, 1903. Thirty months ago, while serving as a sailor, he sustained a severe fall on a United States vessel, striking on his back across a tense rope. He was rendered unconscious, and remained so for three days. He lay in bed for three months suffering various pains, and with great loss of muscular power in both legs. During this time he suffered from frequent "attacks," each lasting two or three days, when both legs "stiffened out" and the patient became quite helpless. The intervals between the "attacks" were only six or eight hours. Then his legs felt "numb." His left leg was more affected than the right, and was often "stiff and trembling-like." He always felt the "attacks" coming on by beginning stiffness in his legs.

At the end of three months he was removed from bed to a chair. His legs were now no

* Paper read before the Allegheny County Medical Society, Jan. 19, 1904.

longer stiff. Two or three weeks later he was barely able to stand alone. Then he began to walk a little; and nine months after the accident he was able to go around at a "pretty lively gait." He still suffered some pain—in the soles of his feet and in the popliteal spaces and in the left side of his back (probably hyperesthesia). In general, he felt quite well, began work for a railroad as a bridge inspector and continued steadily at this occupation until two months ago.

At this time he met with a second accident, a fall of twenty feet from a bridge. Following this accident he suffered pains in the head, neck and abdomen, small of the back, and in both legs, more in the left than the right. Severe frontal and occipital headaches which were at first marked symptoms, have now considerably abated. Once or twice a day for a period of about thirty minutes his "legs stiffen out."

For a period of six weeks following both these accidents the patient was catheterized. Following the first accident he alleges a bed sore had developed. (?)

Examination, July 16, 1903.—Mental State: Patient is very anxious and apprehensive. He tells his story in a vague, halting and disconnected manner, although he was quite voluble.

Motor System.—The left foot is strongly contracted in a position of talipes equinus. The arch is much increased. Attempts to extend the foot are quite painful and are vigorously resisted. There seems to be much loss of power in the legs, more marked in the left than in the right. There is no apparent atrophy. Much fibrillary twitching develops in the left calf with attempts to extend the foot.

Sensory Functions.—There is universal analgesia, except over the following areas which are intensely hyperesthetic, viz., soles of feet and palms of hands, a spot about the size of a dime just above the root of the nose, a somewhat larger area over the occiput, several areas along the spine with a larger and especially well-marked area over the lower sacrum and coccyx. The lower limbs from a little above the knees downward except over the dorsum of the left foot and over the soles exhibit loss of contact as well as loss of pain sense. (See charts.) Visual fields are both markedly contracted.

Tendon Reflexes.—Both knee-jerks are quick, the left being longer than the right. Babinski toe reflex is absent.

The spine seemed normal; and in other respects the examination was negative. Subsequent examinations showed a good deal of shifting of the areas of anesthesia and hyperesthesia, with a gradual dimunition of their extent and intensity. On August 1 pain sense and contact sense seemed nearly normal, the points of hyperesthesia at the root of the nose and over occiput had disappeared and the visual fields were quite normal. Hyperesthesia along spine and in soles of feet and palms was much less in degree. The contracture of the left foot was considerably less marked. In short, the patient had greatly improved in every respect under treatment, the chief features of which were suggestion, isolation, and hydrotherapy. On August 14 the patient, without warning, left the hospital.

Remarks.—It only remains to speak of the temperature, respiration, and pulse. The generally bizarre character of the temperature curve with the wide and sudden variations and the absence of changes in pulse and respiratory rate which would ordinarily correspond to the temperature curve in febrile conditions is the most noteworthy feature. The respiration rate was generally much increased in frequency, ranging most of the time from to 30 to 60. It bore no relationship to the pulse rate. For example on July 26 when the respirations were 60 a minute, the pulse was 66 while the temperature was 107° F. The pulse rate was remarkably steady considering the wide variations in respirations and in the temperature. Most of the time it was between 65 and 75. Rarely did it go below 60 or above 80. The temperature on the other hand ranged from 96° to 109° F.; and the respiration rate from 18 to 60, being much of the time above 40. The respiratory rate gradually subsided as the patient improved.

Without going into tedious detail, it may be stated that careful examination of the thoracic and abdominal viscera were made both by Dr. Ohail and myself to discover if possible any organic disease; for it is of course well known that hysteria may be associated with and indeed spring from organic disease. Our examinations discovered no organic disease.

The case, I believe, can therefore be regarded as a clear one of major hysteria. The permanent stigmata consisting in the contracture of the left foot and the sensory changes named including the greatly restricted visual fields constitute positive evidence of hysteria, from which one can make the diagnosis of this affection with great confidence, and which also gives one a much greater feeling of assurance than is possible in those cases where the evidence is largely or wholly negative in character.

That these marked variations in temperature are possible as symptoms of hysteria is ample evidence that although we regard hysteria as a mental disease it is one which may influence the so-called vegetable functions of the body. The altered pulse and respiration rates illustrate to a degree the same fact.

Note.—January 12, 1904 (five months after he eloped from the hospital), I learn that the patient has not only maintained but continued the improvement made in the hospital.

Sanitary Training School in Manila.—The Board of Health for the Philippine Islands reports the establishment in Manila of a course of instruction for provincial health officers. This course extends over a period of four weeks, is wholly practical, and is intended to remedy deficiencies in sanitary training and induce common methods of executing sanitary work by the various provincial boards of health.

MEDICAL PROGRESS.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

A Macroscopic Test for Leucocytosis.—It is not seldom observed, according to C. HIRSCH and E. STADLER (Hoppe-Seyler's Zeitsch., Feb. 20, 1904), that urine containing pus, as soon as it becomes ammoniacal, acquires a slimy or ropy consistency. This fact was applied by Donné in his well-known test for pus in the urine, namely, the addition of concentrated caustic potash solution to the urine and shaking the latter, with the production of a marked viscosity. This test has been modified by J. Müller for the detection of leucocytes in the urine, in the following manner. To 5-10 c.c. of the suspected urine is added, drop by drop, officinal KOH, the mixture being vigorously shaken after each addition. The leucocytes swell up and impart the slimy characteristic to the mixture. If the latter is now shaken and the test-tube is then held quiet, it is noticed that the air bubbles in the ropy solution either rise very slowly or, if the mixture be very viscous, do not rise at all. This reaction is positive in the presence of 1200 leucocytes per cubic millimeter. An excess of KOH is to be avoided, for this dissolves the leucocytes. The author was stimulated to try this test for the detection of leucocytosis in blood, with good results. The blood of a leucemic patient, containing 400,000 leucocytes per cubic millimeter was examined. Twenty c.mm. blood were mixed with 5 c.mm. .9 per cent. salt solution. To this KOH was added drop by drop and the mixture became jelly-like. On shaking, large air-bubbles appeared and these rose very slowly. This phenomenon was obtained in cases of inflammatory leucocytosis, varying from 20,000 to 40,000. In these the results were less exaggerated and of shorter duration. Militating against the practical value of this test is the fact that normal blood with 8,000 to 10,000 leucocytes, acquires under the same treatment a viscous character. In the cases of marked leucemia the enormous gelatinization would serve to indicate a high leucocytosis. The theoretical explanation of this reaction is as follows: According to Kossel in the solution of the nuclei of the leucocytes by the KOH, the nucleoproteid is decomposed into alkali-albumin and the sodium salt of nucleic acid. The latter swells to a jelly. The further addition of KOH, or boiling, causes the formation of nucleic acid B, which no longer gelatinizes.

Is Diphtheria Transmissible by Water?—Having been called on several occasions to determine whether drinking-water was the source of sudden outbreaks of diphtheria, F. SEILER and W. DE STOUTZ (Rev. Méd. de la Suisse Romande, March 20, 1904) made experiments to find how long the Klebs-Loeffler bacillus would live in water. Having isolated a virulent culture from the throat, they infected 10 c.c. of normal bouillon, and the next day added one drop of this to one liter of distilled water in a sterilized rubber bag, and two drops to three liters in another bag. After thorough shaking, the bags were left at 18° C. for twenty-four hours. Then one drop from each bag was implanted on serum and left in the incubator eighteen to twenty-four hours. Typical colonies resulted and the individual bacteria had the morphology of the Klebs-Loeffler. Every day for nine days a fresh drop was taken from each bag and a culture made of it with positive results. In another series of experiments the water was implanted with a tiny piece of serum culture, and not only did the bacilli remain alive and virulent, but even increased in number from day to day in the distilled water left at ordinary temperature. Larger quantities of water, 10 to 15 liters, were then taken, and in every case the addition of a single drop of bouillon culture was sufficient to give positive cultures for from nine to twelve days, the time during which the tests were continued.

The Bactericidal Reaction in the Blood Serum of Typhoid Cases.—Tests which show that the bactericidal action of the blood serum of typhoid patients afford a more delicate diagnostic measure than agglutination are advocated by R. STERN and W. KORTE (Berl. klin. Woch., Feb. 29, 1904). The principles involved in the method are as follows: A quantity of the suspected serum is rendered inactive to 56° C. To this is added a mixture of normal serum, containing the complements, and typhoid bacilli. By constant dilution of the serum to be examined, it is possible to determine the smallest amount which displays any bactericidal action. The serum taken from the patient is heated in a hot water bath to 55° C. in order to render its complement inactive, and then diluted with normal salt solution, 50, 100, or even a greater number of times. A series of test tubes are then filled with ½, ¼, ⅛, etc., of the original dilution together with sufficient saline solution to make 1 c.c. To each tube is then added 0.5 c.cm. of a 1-5,000 twenty-four hour culture in bouillon of typhoid bacilli, and also 0.5 c.cm. of fresh rabbit serum diluted with normal salt solution. Controls are also made on plates. Each of the test tubes then contains 2 c.c. of fluid and the bacilli and also the suspected serum in varying amounts. The tubes are now placed in the incubator and then the contents are planted out on agar plates, after three to four hours. The plates are then placed in the incubator for twelve hours, after which they may be inspected. Or the tubes may be kept in the incubator for eight hours, and conclusions drawn from the presence or absence of any turbidity. The latter method, although more rapid and simpler, is often invalidated by the presence of impurities in the serum. In this manner 32 cases of typhoid were observed and as a control, the serum from 23 patients who had never had typhoid. The reaction was manifested readily with a solution of 1-1,000; in the majority of cases even with 1-50,000 and the highest dilution observed was 1-4,000,000. The tests are especially applicable to those cases where the agglutination test is absent, appears late or can only be elicited with a relatively high concentrated serum, so that some doubt exists whether it is really produced by a typhoid infection.

The Aceton-content of the Organs in Cases Dead from Diabetic Coma.—The relation of aceton to diabetic coma has never been clearly defined. H. C. GEELMUYDEN (Hoppe-Seyler's Zeitsch., Feb. 20, 1904) finds that the organs of diabetics contain much more aceton than the corresponding organs of normal individuals. In both cases the liver has the smallest contefit in aceton. In diabetics the urine may contain more aceton than the blood. In attempting to explain the origin of pathological secretory products belonging to an intermediate metabolism, the author considers three possibilities: Either the substances in question are not produced in the normal organism, in which case they are the result of a perverse metabolism or else they are formed in the normal organism. In the latter case they are either formed in small amount, and appear in the excreta in larger amounts only as the result of an exaggerated physiological process; or they may be normally produced in large amount, only to be transformed into other substances. If by virtue of a diminished oxidation this transformation does not take place, then the original substances appear in the excreta. It is found that oxybutyric acid and diacetic acid are in-

termediate metabolic products, which are normally formed in the body in large amount, to be transformed into other substances under the influence of normal nutrition and metabolism. The author believes that carbohydrates and aceton-bodies are united together in the intermediate metabolism by means of a synthesis, which is necessary for the further transformation of the aceton-bodies. The absence or incompleteness of this synthesis leads to an accumulation of aceton with its consequent elimination from the organism. The possibility of this synthesis is supported by the fact that normally glycuronic acid, a carbohydrate derivative, unites with aceton.

Development of Hemolymph Nodes in Adipose Tissue.—Extensive experimental investigations conducted by A. S. WARTHIN (Proc. of Path. Soc. of Phila., Dec., 1903) prove that the histogenetic relations existing between lymphoid and adipose tissue are so close that a transformation of either one into the other may occur. A cyclia alternation between lymphoid and adipose tissue occurs throughout life. In old age the development of lymphoid tissue is lessened or comes to a standstill and the existing lymphoid structures undergo fatty atrophy and fatty metaplasia. In embryonic development of the formation of lymphoid tissue may be coincident with or follow the development of the primitive fat tissue. Not all lymph-nodes, however, pass through the stage of the primitive fat organ; the majority probably develop directly from the mesenchymal organs. A transformation of fat lobules into hemolymph nodes occurs in the human fetus. Under pathological conditions the development of hemolymph and ordinary lymph-nodes in adipose tissue may be greatly increased and such structures may be formed in regions where normally they are not found. The relationship between hemolymph and adipose tissue is more intimate than between the latter and ordinary lymph tissue. An analogy of the process is seen in the lymphoid transformation of the fatty marrow occurring in anemia and leukemia. In some of the lower vertebrates the close relationship between the hemolymph nodes and adipose tissue is seen in the persistence of adipose tissue of a fetal type (the so-called hibernating gland). Evidences of hemolysis and elaboration of blood-pigment are found in the fat cells as well as in the endothelium of this tissue, so that it may be regarded as a more primitive form of hemal organ than the hemolymph node, differing from the latter in the absence of lymphoid cells and the non-development of blood-sinuses. The steps of the development of the nodes in fat are as follows: (1) A dilatation of the capillaries of small fat lobules, the first stage resembling an angiectatic fat lobule. (2) A removal of the fat from the cells, immediately along the dilated capillaries and their conversion into reticular cells. (3) An infiltration or development of lymphoid cells in the meshes of the reticulum along the dilated capillaries, and an extension of the lymphoid cells between the neighboring fat cells. (4) Through the atrophy of the intervening fat cells and the confluence of portions of the dilated capillaries, blood sinuses are eventually formed. The reticulum traversing these may be derived from the original fat cells or arise through a proliferation of the endothelium and reticulum bordering upon the capillary. (5) Lastly, the fat is removed from the reticulum, the latter is uniformly infiltrated with lymphoid cells, the blood sinuses are still further developed and the characteristic structure of a hemolymph node is obtained.

The Capsule of Anthrax Bacilli.—An excellent stain for bringing out the capsule which surrounds anthrax bacilli, according to L. HEIM (Münch. med. Woch., March 8, 1904), is methylene blue containing a sufficiently large amount of the red substance which develops with age after the addition of some alkali. The bacilli will appear blue, the capsule pink, but great care must be employed not to wash too long in water since the capsule consists chiefly of mucin and will readily dissolve out. The stain may be considered a specific reagent for mucin and will work equally well with other capsule-bacteria. Most pathogenic bacteria only possess a capsule in the animal body or if grown on blood-serum; this seems to protect them against the disintegrating powers of the blood. Occasionally the same pink substance is found in the endothelial cells of the heart and vessels of animals experimentally infected with anthrax; this is solely due to a saturation of the cells with mucin excreted by the bacteria.

Splenomegaly.—A great deal has recently been published bearing on the various forms of splenic enlargement. From the unknown Banti's disease to the well-known enlargements due to malaria and other thoroughly well understood factors, one reaches a middle ground in which the splenic enlargement is dependent upon the anomalous types of Indian fever. Presumably all of these are of plasmodium origin, but little definite is known about them. W. B. LEISHMAN (Brit. Med. Jour., Feb. 6, 1904) states that Bently asserts that he has found the parasites described by the author in the previous communication in cases of kala-azar. Donovan has found the parasite in 16 cases, Low in two cases and Marchand has reported their occurring in a German soldier recently home from Pekin. These parasitic bodies closely resemble a form of protozoon described by J. H. Wright in the case of Delhi sore. There is no doubt in the mind of the author that they are either identical with or closely analogous to the parasitic bodies now being found in tropical splenomegaly. Wright has no doubt as to the parasitic nature of these bodies and proposes for them a new genus and species. Ross has frequently found in the pus of Delhi sores large numbers of flagellated organisms. It is possible that these may prove to be an altered form of Wright's new genus. The frequency of these sores in India and their superficial nature should facilitate the confirmation of Wright's work. Lavaran and Ross have disagreed as to the nature of these parasites. The former in his most recent publication adheres to his original view that they represent a new species of the genus *Piroplasma*. The author believes that these bodies represent an involuted stage of a flagellate organism. Certainly the failure in all cases to detect the parasites in the peripheral blood is a strong argument against their being intracorpuscular.

The Protective Function of the Greater Omentum.—It is an old idea that the greater omentum plays a protective rôle with regard to the peritoneum. R. PIRONE (Arch. Ital. de Biol., Jan. 30, 1904) conducted a series of researches to determine the following questions: the details of the protective function and whether, if the blood-supply of the spleen be cut off by ligature, and if this organ be surrounded by the greater omentum, whether the latter will form a conjunctival sac around the spleen renewing its blood-supply or whether it will assist in the destruction of this organ. On practising ligature of the splenic artery on cats and rabbits, the author noticed a few days after the operation, that the greater omentum had already surrounded the spleen completely isolating it from the peritoneal cavity. The omentum shows merely a hyperemia, and in spite of the presence of a fibrinous exudation, it does not adhere to the surface of the spleen. At the end of the first week adhesion occurs, a non-detachable capsule being formed, masses of fat appearing on its surface, and the omentum of which it consists being thickened and opaque. One

week later this capsule is complete, fibrous and very adherent. The rest of the peritoneum is unchanged. There is thus observed in the case of the greater omentum, that "intelligent mobility," as it has been called, which in certain conditions serves as an efficient protective organ for the general peritoneum and the organs which it surrounds. Extirpation of the spleen is not followed by any macroscopic changes in the omentum. The author studied the histological changes occurring in the omentum encapsulating the spleen undergoing necrosis as the result of ligature of its vessels. There is from the beginning an immediate emigration of leucocytes, mostly polynuclear, which gather in the vascular spaces of the omentum, or else fill the space between the omentum and the spleen; some penetrate the capsule of the spleen. At the same time there occurs in the omentum a process which continues until the end, namely, a very active multiplication of either the vascular cells in the wall of the serous membrane or of the endothelial cells which line it. At the same time there is also a new formation of blood vessels, which little by little penetrate the capsule of the spleen. On the other hand the new endothelial cells detach themselves from the newly formed tissue, and undergoing marked intracellular changes, are transformed into macrophagocytes, which act as such. These are soon found filled with the cellular detritus of the necrosing spleen, broken-down nuclei, red corpuscles, granules of hematoidin, etc. This represents the culmination of the process which gradually subsides, and a little later (the third week in the rabbits), the necrotic tissue of the spleen has been replaced by an omental cicatrix. The omentum thus serves two functions: the plastic character of its vascular and endothelial tissues enables it not only to act the part of a scavenger in removing the dead splenic substance, but also to shield the peritoneal cavity and thereby the entire organism.

Influence of Alcohol on Resistance to Infection.—This subject has been studied by a number of observers, whose conclusions are based rather on the results of inoculations than on the actual conditions of the immunity present under the altered circumstances and do not give any information as to the manner in which the alcohol influences the specific reactionary changes in the blood. E. FRIEDBERGER (Berl. klin. Woch., March 7, 1904) in a recent investigation endeavored to find what effect the more or less continued administration of alcohol had on the production of the specific protective substances in the blood of rabbits inoculated with cholera. He found that when he gave an intoxicating dose of alcohol at the same time that the immunizing against cholera was done, the formation of the antibodies was increased on the average about 2.5 times when compared with the control animals. This seems to corroborate the clinical experience that in infectious diseases, especially in the early stages, the administration of alcohol has a decided beneficial influence on the course of the disease. It was also demonstrated that when the alcohol was given for a considerable time, the same values were reduced about 16 times as compared with the control animal. This also corresponds with the experience that during epidemics, alcoholic subjects succumb much more readily than other persons.

Distribution of Bacillus Coli in Nature.—Very little is known about this important subject. J. W. H. EYRE (Lancet, March 5, 1904) calls attention to the fact that based on the supposition that this bacillus was indigenous to the human gut, bacteriologists have long been in the habit of using it as a guide in determining the presence or absence of infection by human excreta. In order to eliminate those bacteria allied with the *Bacillus coli*, which are sometimes referred to as "coliform" and to make his report of very definite value, all bacilli not presenting the following characteristics were eliminated: Short bacillus with rounded ends; feeble motility; decolorized by gram producing acid reaction on milk; producing indol in peptone; water within three days; fermenting dextrose; lactose; maltose, saccharose mannite; glycerin; inulin; and dextrin with production of acid in gas; reducing nitrates to nitrites and forming a moist brown growth upon the potato. Despite this very close method of circumscription, the author had no difficulty in isolating large numbers of *Bacillus coli* from the intestines of the small rodents of the laboratory, also from the cat and dog. Positive results were also obtained from the sheep, goat, horse and cow. Specimens of the ordinary fowl, duck, pigeon and sparrow also yielded abundant colon bacilli. It is important that the examination should be made as soon after death as possible. Two seabirds killed three miles from land were found to harbor great quantities of these organisms. Similarly fish caught at a distance two miles from land and including many varieties all contained this germ. These findings are of very great importance in view of the modern attitude which is that the presence of *Bacillus coli communis* is pathognomonic of infection by human excrement.

Caffeine and Bacteriology.—Certain distinct uses of caffeine as an aid in bacterial diagnosis are suggested by J. COURMONT and L. LACOMME (Jour. de Physiol., March 15, 1904). Caffeine is bactericidal to many germs. The addition of this substance to the extent of one per cent. to the bouillon culture, prevents the vegetation of the colon bacillus without affecting the greater number of bacillus of Eberth. Certain bacilli of Eberth, having vegetated a long time in the laboratory, or having been recently removed from the blood of typhoid patients, are still more sensitive to the action of caffeine than the colon bacillus. The bacilli from the blood of a typhoid patient cannot vegetate in a caffeinated bouillon, while those from the urine of the same patient are not affected. This substance is mainly interesting as furnishing for the first time a bactericidal medium for the colon bacillus which will not affect certain bacilli of Eberth. It is valuable, therefore, from the standpoint of differential diagnosis. It cannot serve as a means of the diagnosis of typhoid, for the feces in the presence of the caffeinated media, presents no bacilli of Eberth.

Studies in Pneumonia and Pneumococcus Infections.—With improved technic, and using for inoculation large quantities of blood, according to E. C. ROSENOW (Jour. of Infect. Dis., March 19, 1904) the pneumococcus can be recovered in practically all cases of croupous pneumonia, and in obscure cases of pneumococcus infection blood cultures may be a diagnostic method of positive value. Pneumococcemia in pneumonia does not mean an especially unfavorable prognosis and is to be regarded here, as in subcutaneous pneumococcus infections of the rabbit, not as an especially ominous or agonal process, but rather as an integral part of the infection. There seems to be a diminution, either in the number or viability, or both, of the pneumococci in the blood at the time of crisis. The number of leucocytes in pneumonia in man and the pneumococcus infection of rabbits is an index to the degree of resistance, and the leucocytes probably constitute an important factor in combating the infection. This supports clinical observation. The hypoleucocytosis developing upon a previous hyperleucocytosis during the course of many fatal cases of pneumonia cannot be looked upon as due to the entrance of the pneumococcus cells into the blood stream, but probably as

the result of an exhaustion of the resisting powers. The leucocytosis may be incited, in part at least, by soluble substances liberated by pneumococci. It was not possible to establish any appreciable difference in the degree of virulence of the pneumococcus isolated early or late in the course of the disease, or in the fatal or non-fatal cases. Fresh normal and pneumonic blood and serum have no bactericidal influence upon the pneumococcus. Whatever other differences they may have, so far as this point goes, the serum of pneumonia patients behaves exactly as does normal serum. The interesting question whether lobar pneumonia is the primary result of a direct local infection of the lung, or a secondary localization of a primary blood invasion, is as yet hardly ripe for final discussion, but that the latter does occur, at least in some cases, is not altogether unlikely. The production of acids by pneumococci in pneumonic serum suggests that some of the toxic symptoms of pneumonia may be due to acid intoxication.

Improved Technic of Agglutination Test in Typhoid.—The method devised by Pröscher for performing this test with a twenty-four-hour bouillon culture of *Bacillus typhosus* which has been killed with formalin, has been tested by E. H. RUEDIGER (Jour. of Infectious Diseases, March 19, 1904) with successful results. The value of this test rests on the fact that the serum test may be applied without the use of a microscope, and merely by the use of stock cultures of typhoid bacilli killed by formalin, and a few test tubes. The technic is as follows: Inoculate a large quantity of plain bouillon (100—1,000 c.c.) with *Bacillus typhosus*, incubate at 36° C. for twenty-four hours, and add 1 c.c. formalin for every 100 c.c. of bouillon. The culture is now ready for future use, except that it must be shaken before it is used, because the dead organisms gradually settle to the bottom. A culture prepared in this manner is always ready for use, and can be kept at the room temperature for many months. With a lancet or some other sharp instrument prick the lobe of the ear or the finger tip (preferably the former) and collect four drops of blood in a small test-tube or vial containing 2 c.c. of a 1:500 solution of formalin in distilled water. Laking is soon complete, making a clear solution of approximately 1:10 to 1 c.c. of the blood solution add 4 c.c. of the dead culture, making a dilution of about 1:50, and set the tube aside. Make a control tube by mixing 1 c.c. of a 1:10 solution of normal blood, or 1 c.c. of distilled water, with 4 c.c. of the culture, and set it aside. If agglutination takes place, the dead organisms collect in clumps, and within an hour or two are seen as a flocculent precipitate settling toward the bottom, leaving the bouillon clear at the end of twelve to twenty-four hours. Dried blood may be used instead of fresh. On a glass slide collect four drops of blood, spread it and allow it to dry. When wanted for use, dissolve it in 2 c.c. of distilled water and proceed as directed above. The method is suggested as suitable for hospitals, boards of health and private practice.

Lymphatic Varices of the Small Intestine.—Frequently found in the mucosa of the digestive tract, particularly that of the jejunum, according to M. LETULLE (Jour. de Physiol., March 15, 1904) is a lesion characterized by a varicosity of the lymphatics. The cause of this condition is an obstacle to the flow of lymph consisting in an obliterating endolymphitis affecting the wall of the tributary lacteal of the region affected. The coincidence of this lesion with chronic atrophic nephritis suggests a general cause capable of producing multiple or general lesions. Among the antecedents of those affected with this condition, syphilis is frequently found.

Corset Cancer.—It has long been a recognized fact that small but acute injuries are prone to develop tuberculosis while those of a similar degree, but more chronic in their infliction tend to the production of malignant change. R. CLEMENT LUCAS (Lancet, April 2, 1904) states that he has demonstrated a site of origin of cancer dependent upon the friction of the upper edge of the corset, where it crosses the anterior fold of the axilla. Whether carcinoma is produced directly by chronic irritation, or whether such irritation rubs in an organism from without is in the nature of things purely hypothetical. The rubbing in of pus-producing organisms at the back of the neck by the collar button is a well-known fact which may justly give credence to the corset theory. The author considers the possibilities of infection and contagion, attempting to show that syphilis, which produces injurious effects in numerous situations, may often be shown to be the forerunner of carcinoma. The infectiousness of carcinoma was deduced from the author's original observation of three persons suffering from carcinoma at the same time in the same house, published in 1887.

Steatogenesis in the Organs Produced Experimentally.—Very interesting results in the production of fatty changes in the various organs were obtained by C. MAVRAKIS (Archiv f. Anat. u. Physiol., Feb. 24, 1904). He found that removal of the thyroid gland produces a steatogenesis. Toxins (diphtheritic and typhoid) injected locally into organs whose circulation has been cut off by ligature of the arteries, produce fatty degeneration. A more intense steatogenesis is the result of repeated injections of phosphorus into organs similarly treated. The fat thus formed is produced by the metamorphosis of the cellular protoplasm, and not by the deposition of fat from other quarters. The greater part of the fat formed during fatty degeneration comes from the albumin of the cell.

Diagnosis of Empyema in Infancy.—That the physical signs of pleural effusion, especially if purulent, differ materially from those in adults, is the experience of J. L. MORSE (Am. Med., March 12, 1904). He states that unless these differences are kept constantly in mind, and the diagnosis based on them rather than on unusual signs of adult life, mistakes will constantly occur. Morse sums up the question as follows: Metapneumonic empyema usually develops during the last days of a pneumonia or during the first days after the crisis, but in rare instances may develop during the early days or during the convalescence. Persistence of the fever and other symptoms after the time of the expected crisis or their recurrence after the crisis, should always suggest the possibility of an empyema. There is nothing characteristic about the symptoms, which are those of any severe pulmonary affection. Rapid emaciation and progressive pallor are the most common symptoms in neglected cases, while chills and sweating are unusual. Enlargement of the affected side as a whole is more common than flattening or bulging of the intercostal spaces. The most characteristic sign of effusion is a marked sense of resistance on the affected side. Next in importance is displacement of the heart, which almost always occurs. These two signs justify the diagnosis, even if all the other physical signs are inconsistent. Dulness or flatness is almost always present but may be replaced by tympany. Respiration is unusually bronchial or bronchovesicular and diminished in intensity. Loud bronchial respiration is not uncommon, however, even with large effusions, and counts very little if at all, against the presence of fluid. He also finds that the vocal fremitus is difficult to determine.

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THE ASSOCIATION OF AMERICAN PHYSICIANS.

THE nineteenth annual meeting of the Association of American Physicians, held at Washington during the past week, the proceedings of which will be found on p. 949 of this week's MEDICAL NEWS, proved as ever the most interesting medical event of the year. There was the usual full attendance and that lively discussion of papers of practical import which has always characterized the meetings. The most interesting feature of the program is, that while there are no symposia announced, the discussions on the papers resolve themselves into this method of treatment, with the conventional and merely academic material left out. Special emphasis is always laid on the suggestive experiences gleaned from actual practice.

On the first day the papers on Polyuria in Typhoid Fever and the occurrence of Venous Thrombosis as a complication and sequela of that disease brought out important details with regard even to the treatment of the affection. The use of copious water drinking and its effect upon elimination of toxic material through the diuresis produced with the advisability of keeping the urine of typhoid fever patients reasonably plentiful was dwelt on. The amount of urine passed, where the patient is allowed an unlimited supply of water, may be quite surprising. With a reservoir of cool, fresh water beside the bed, connected with a tube in such a way that the patient can always take as much water and as frequently as he wishes without disturbing himself or others, gallons of water are consumed and the patient may pass as high as 400 to 500 ounces of urine. The results of such abundant flushing out of the intestinal and urinary tracts, indeed of the whole system, seems to have excellent results in the prevention of restlessness and other toxemic symptoms.

Dr. Cabot's report of negative results on blood pressure with comparatively large daily doses of strychnine, from one-eighth grain to one sixth grain, will be of interest to the many practitioners throughout the country who are accustomed to depend on strychnine as one of the most helpful of stimulants. While patients suffering from fever under such gentle emotions as those due to the visit of a friend or the coming of the dinner tray, or even some change of position, exhibited marked variations of blood pressure, which could be readily observed, no change occurred after strychnine. Dr. Hare emphasized the demonstration as to the lack of stimulant qualities of strychnine in the ordinary sense of the word. The effect of the drug is really one of irritation of the nervous system rather than any direct action upon the heart, though this is the theory on which the drug is usually employed. The most surprising feature of the discussion is Dr. Cabot's announcement that after strychnine had been administered in doses up to one-sixth grain in twenty-four hours for many days the sudden cutting off of the drug produced no effect upon the patients.

The occurrence in epidemic form of cerebrospinal meningitis in many places throughout the country makes Dr. Koplik's contribution to this subject, which will appear in full in a subsequent issue of the MEDICAL NEWS, of special interest. The points of differential diagnosis between this disease and tuberculous meningitis were well brought out. It is extremely important that sporadic cases secure early recognition and thus facilitate the early employment of prophylactic measures so as to prevent, as far as possible, the spread of the disease. That it is contagious there can be no doubt, though the method of distribution is unknown. The most important differential sign is the occurrence of optic papillitis, so common in tuberculous meningitis, but absent almost without exception in epidemic cerebrospinal fever.

Babinski's toe reflex is usually absent in tuberculous meningitis though commonly present in cerebrospinal. The occurrence of other cases of the disease and the suspicion of all cases showing meningitic symptoms that must be aroused in all physicians' minds at this time, will lead to the recognition of the disease.

Prof. Osler's suggestion that soldiers returning from the Philippines suffering from anemia will, in some cases at least, show the presence of the parasite described by Donovan and Leischman, which is evidently of protozoic character, should lead physicians who have such cases under their care, to look up the characteristics of the parasite. The clinical symptoms present in these cases are a decided persistent anemia accompanied by some digestive disturbances and an enlarged spleen. The affection represents doubtless another of those peculiar splenomegalic conditions which, when they develop as a result of residence in a tropical and especially malarial country, were uniformly set down as malarial in origin but which recent investigations have shown to be due to a series of pathological conditions consequent on the presence of peculiar parasites usually of protozoic nature.

The suggestion of the retiring president, Dr. Councilman, to increase the unefulness of the Association of American Physicians by making honorary members of all those who have been twenty years in the organization, which will celebrate its twentieth anniversary next year, allowing them to retain their privileges to present papers and take part in discussions but making room, even with the strict limitation of membership for younger and more active investigators, seems eminently calculated to keep for the Association the exclusiveness that has made membership a prize, at the same time secure the excellent purpose of continuous rejuvenescence. In this way the Association will retain that conservatively progressive character which has deservedly made it such a force in American life during the past score of years and will assure its own future from the inevitable tendency to sclerosis of interests that a large membership of older men might bring with it.

IMMUNITY TO RATTLESNAKE POISON.

MANY years ago, when it was a novel duality for a physician to be a literary man, Oliver Wendell Holmes hinted at the possibility of immunity from rattlesnake poison in his fascinating novel "Elsie Venner." Dr. S. Weir Mitchell had published a monograph on snake poisons and Dr. Holmes' hero, who wrote his thesis on Some Unresolved Nebulæ of Medical Science, may well have taken his hint from this early study by the Philadelphian.

One of the most interesting and at the same time suggestive communications made at the recent meeting of the Association of American Physicians, was announced by Dr. S. Weir Mitchell in a letter from Dr. Noguchi, now pursuing investigations in the Institute for Serum Therapy of Copenhagen.

It may be recalled that this brilliant Japanese student was selected by the trustees of the Carnegie Research Fund to carry on special work and that following his preliminary studies with Dr. Flexner he has devoted himself more particularly to the investigation of the venom of the rattlesnake (*Crotalus*) and to the problem of the production of an immunizing serum for this venom.

In this preliminary communication, read by Dr. Mitchell, he announces his belief that he has finally obtained an efficient anticrotalic serum which promises much for human therapeutics. He writes that he has determined the minimum lethal dose of pure dried *Crotalus* venom to be .0005 mg. for 250 gms. of guinea-pig when injected intraperitoneally, and that after five months steady application he has been able to develop in the blood of the goat an anticrotalic serum which in doses of 2.5 c.c., when injected simultaneously with the snake venom, will protect the guinea-pig from twelve times the minimum lethal dose. If the antidotal serum is injected one hour after the receipt of the venom, the same amount will counteract five minimum lethal doses, and that after a period of three hours, which period he has found represents the time of maximum effect, 4 c.c. of anticrotalic serum will save the animal. Inasmuch as subcutaneous injections of venom, the analogue of the actual snake bite, are one-half as toxic as intraperitoneal applications, Noguchi views the therapeutic application of his anticrotalic serum in a distinctively hopeful light.

The anticrotalic serum that he has elaborated he believes is specific. At the same time he has had occasion to test Calmette's cobra antivenene, which, it will be remembered, that investigator claims is useful in antidoting not only cobra venom, but other venoms as well. In his investigations Noguchi believes he has demonstrated that Calmette's serum is certainly not of any

value in *Crotalus* poisoning and he casts grave doubt on its value even in cobra poisoning.

Should subsequent study substantiate Noguchi's claims there will be brought to successful fruition a long line of researches which have been initiated, fostered and finally announced as completed by our venerable Nestor of American Physicians, S. Weir Mitchell.

GASTRIC DILATATION AND TETANY.

SUBJECTS which are relatively rare of occurrence are necessarily put on the shelf while others more frequently brought to the notice of the practitioner of medicine and of surgery are exploited and placed upon a firm basis of clinical entity. The subject of tetany has long been among those whose fate it has been to be side-tracked, and it is only in recent times that any persistent efforts have been made to understand this symptom or this disease whichever it may prove to be.

It is true that Kussmaul, so far back as 1869, recorded observations made on the form of tetany which he believed to be connected with gastric dilatation. Later on, Trevelyan, Bouveret and others conducted experiments on this rather complex train of symptoms, but all in all, the subject has been relatively neglected.

Osler recognizes a large number of forms, prominent among which are epidemic or, as it is sometimes called, rheumatic tetany. Trousseau mentions a form of tetany associated with debility following lactation and chronic diarrhea. He called it "nurses' contracture." It may be a sequel of thyroidectomy. "True tetany," Osler continues, "in this country, is extremely rare, seventy-two cases only having been collected." Lastly, he states, "There is a form of tetany which is associated with dilatation of the stomach, particularly after the organ has been washed out. The nature of the disease is unknown; certain forms depend undoubtedly on loss of the function of the thyroid gland." In his classic description of dilatation of the stomach, Osler says: "A very remarkable symptom, which occurs occasionally, is tetany, first described by Kussmaul." It is thus seen that our recognized medical authority is confessedly in the dark as to the etiology and the treatment of tetany in general and particularly of the form which arises from gastric dilatation.

That the entire subject of tetany has not received the attention which recent observations might seem to show it to deserve is to be found in the fact that it has received no place whatsoever in the index of Park's Surgery. Rose and Carless, in their Manual of Surgery, make no mention whatsoever of the only form which recent surgical advance seems to place in the realm of diseases curable by operative intervention.

Holt gives the subject a rather wide consideration. He says that it is rare, stating that he commonly sees about five cases a year. He thinks that it occasionally occurs as a primary disease, being frequently associated with rickets, chronic diarrhea, or marasmus. The most frequent exciting cause, he ascribes to some irritation of the gastro-enteric tract. This is the only suggestion or hint thrown out by this author that the stomach may, under certain conditions, be the exciting factor. He did not, at the time of writing, consider it of sufficient importance to give it special mention.

It has recently been shown at the Surgical Laboratory of Columbia that obstruction to the gut at or near the pylorus will, in the case of dogs, result in their death with tetanoid symptoms, which develop in from twenty-four to thirty-six hours. It is stated on very good authority that a cord can be tied around the gut of a dog tight enough to occlude the opening, not alone without causing death, but apparently without giving the animal the least inconvenience, if such cord be tied at some point well below the pylorus. Such a suture will not only not result in tetany, but will actually be passed with the feces after a short time, and the point of its insertion will be indistinguishable from the rest of the gut. The exact location in the gut where such obliteration will cause tetany has not yet been definitely determined.

In view of the awakening interest in the matter of gastric dilatation and other lesions, an article contributed by John H. Cunningham, Jr., in the April *Annals of Surgery*, is of more than timely interest. He writes that the symptom, tetany dependent upon gastric dilatation, and known as gastric tetany, is to be differentiated from the tetanic spasms occurring in gastro-enteritis, pregnancy, thyroidectomy, the puerperal state, acute fevers, carpopedal spasms, and from those produced by toxic substances and diseases of the central and peripheral nervous system. Gastric tetany is usually dependent upon pyloric stenosis and associated stasis and hyperchlorhydria. The stenosis is usually benign, the result of ulceration, or, as is often the case with such cicatrices, it may have passed over into a malignant condition.

The first symptom of tetany usually consists of a pricking and numbness in the hand. There is no definite sign by which this special form of tetany differs from other varieties, and the symptoms are in general well known. Bouveret and Devic are reported to have succeeded in isolating a substance soluble in alcohol which seemed closely allied to syntonin in three cases of tetany with gastric dilatation. When injected into the circulation of animals, this product induced general convulsions. Other experimenters have, however, failed to reproduce these findings. Albuminuria has usually been reported in cases of gastric tetany, although there are no recorded post-mortem evidences of renal involvement, and albumin has not been unknown in other forms of tetany.

The prognosis, as given uniformly by authors the world over, is startlingly high, the mortality rate being about 88 per cent.

Until recent years the treatment has been almost entirely medical in all reported cases of gastric tetany. After a careful search of the surgical literature on the subject, Cunningham finds that the operative treatment shows a mortality of only 37.5 per cent. Medical treatment can be briefly summed up in the aphorism, "Nurse, feed and stimulate," to which may be added free lavage of the stomach.

The surgical treatment consists in the simple performance of gastro-enterostomy. Why some cases—an unknown but small percentage of the large number known to be suffering from gastric dilatation—should develop tetany is far beyond our present knowledge. The cause is not the degree of the dilatation or the extent of pyloric obstruction, or the food consumed. Neither has it been shown to be due to the presence of any unusual organism within the dilated organ,—it is one of the enigmas remaining to be solved.

If, however, our appetite for academic demonstrations and proofs in this matter has not yet been satisfied, there is much material of a practical nature to be gleaned from such papers as the one under discussion. From the remarkable history of the case cited by the author, it is evident that the man passed through a great many general hospitals in various eastern cities of the United States; that he was seen by many able medical consultants; that their treatment consisted in rest and lavage; that he became progressively worse; that had the medical treatment continued, he would unquestionably have died. This, rather than the problem as to the presence of some unusual substance in the decomposing material of the stomach, is of interest to the general practitioner. The question which arises in his mind is, What is to be done with cases of tetany which are shown to be due to gastric dilatation?

There is abundant evidence to demonstrate that under medical treatment three-quarters of them will die,—a large percentage from suffocation. Under surgical treatment, somewhat less than one-third perish, and by a relatively painless death. When methods for performing gastro-enterostomy or some other adequate means of drainage are perfected, as they will be within the next ten years, this percentage may be more than cut in two. Indeed, it is conservatively high for the present status of the operation, from ten to fifteen per cent. being claimed by many operators.

ECHOES AND NEWS.

NEW YORK.

Danger in Salads.—At the annual dinner of the Faculty of the New York Polyclinic, given on Monday evening, May 9, Professor Morris Manges, in discussing the question of the contamination of oysters with typhoid germs, said, "There is danger that in reviling the oyster we may overlook greater dangers of infection. Housewives should see to it that celery and salads are carefully washed before they are served."

Hospital Positions.—Graduates in medicine who desire to substitute for members of the house staffs of Bellevue, Gouverneur, Harlem and Fordham hospitals, absent on leave, may apply with credentials giving time and place of graduation, hospital experience and references, to the Superintendent of Bellevue Hospital, First avenue and East Twenty-sixth street.

Progress of the Joint Committee for Consolidation.—At a meeting of the Joint Committee of Conference held at the New York Academy of Medicine, May 6, 1904, the following resolutions were passed:

Resolved, That the President and the Secretary of the Joint Committee of Conference, be authorized and directed to make a certificate provided for in the tenth paragraph of the agreement, and the Counsel of the Committee be directed to proceed with diligence to obtain a final order for the consolidation of the corporations, pursuant to the terms of the agreement, and that the form of the certificate to be made by the Chairman and the Secretary, be in the form of the draft certificate submitted to this Committee, which is as follows:

"SUPREME COURT, NEW YORK COUNTY.—In the matter of the application of the Medical Society of the State of New York, and the New York State Medical Association, for an order consolidating the said corporations, pursuant to the Act, Chapter 1, of the Laws of 1904.

"This is to certify that the Joint Committee of Conference mentioned in the agreement for the consolidation of the Medical Society of the State of New York and The New York State Medical Association, which agreement was unanimously adopted by the Medical Society of the State of New York, at its annual meeting at Albany, on January 26, 1904, and by The New York State Medical Association at a special meeting of the Association held in New York, on March 21, 1904, has not ordered the submission of said agreement or of any questions in connection therewith, to the County Medical

Societies or Associations, referred to in said agreement, and that the conditions precedent to an application to the Court for an order consolidating the Medical Society of the State of New York and The New York State Medical Association have been fully complied with; and this certificate is made pursuant to the "Tenth" paragraph of said agreement.

"In witness thereof, the undersigned, Abraham Jacobi, Chairman of the Joint Committee of Conference and Wisner R. Townsend, Secretary of the Joint Committee of Conference, do hereunto subscribe their names at the City of New York, this.....day of May, 1904."

Thirty out of thirty-five County Associations have ratified. One, Onondaga has refused to ratify, four have not yet reported. The Associations that have ratified represent a membership of 1,711, and those that have not acted a membership of 42. The one refusing to ratify has 14 members. Ratifications have been received from 47 out of the 51 County Societies, four have not yet acted. Those which have ratified represent a membership of 5,569. Those which have not yet acted a membership of 164.

According to the agreement, Article 10, declares "that whenever the Chairman and Secretary of the Joint Conference Committee shall certify that the conditions precedent to an application to the Court have been fully complied with, the Presidents of the respective corporations shall, and they are hereby authorized and required in the name and behalf of their respective corporations to petition the Supreme Court for an order to consolidate in accordance with the terms thereof. Therefore all County Associations and Societies that have not ratified will be asked to appear before the Court at a specified date appointed by the Court, and show cause why the consolidation should not be completed according to the terms of the agreement, despite their failure to ratify.

Hospital Appointments.—The following is the list for the past week: Metropolitan Hospital (Blackwell's Island), J. B. Pentz. Beth Israel, H. Finkelstein, D. Katz, K. Schliwek, M. Dattelbaum.

Navy Doctors Wanted.—Dr. R. E. Marmion, Medical Director of the U. S. Navy, and President of the Navy Medical Examining Board, spoke to the students at the College of Physicians and Surgeons on May 4 upon the advantages of going into the Government service. In previous years it has been difficult to get good men to enter because of the low status of physicians in the rank of officers, and consequently out of 150 places it was common to find 50 of them vacant. Since 1898, however, this aspect of the situation has changed, and a physician now holds positive rank with a chance for promotion. Upon the consent of the Secretary of the Navy one is allowed to come before this Naval Examining Board. He must swear that he is between the ages of twenty-one and thirty years, must be a citizen of the United States and must fill out all the necessary forms in his own handwriting. The examination is held at Washington and occupies nine days, during which the candidate first undergoes a physical test. Failure to pass this debars from further examination. Dr. Marmion stated emphatically that a "pull" is unnecessary and is often quite useless, for each man must stand on the merits he can display before the examiners. For those who pass and are properly commissioned there is a special Naval Medical School at Annapolis where the candidates study for five months previous to actual service. Here they are taught naval law, military surgery, military medicine and tropical diseases, hygiene and quarantine, broad sword and other physical exercises, and are obliged to spend seven and a half hours a week in the bacteriological laboratory. After this course is completed each man is assigned to his post of duty. The salaries range from $1,700 to $4,500 and are likely to be raised 50 per cent. at the next session of Congress. After three years' work in the position to which he was originally assigned a naval doctor may again come before the Board for an examination for promotion.

Professor Bull's Farewell.—On May 4 Prof. William T. Bull delivered his last lecture at the College of Physicians and Surgeons. As a few minutes of the hour were left he followed the custom of those who had seen a long course of service in the college by making a few remarks in laying down the burden and honors of his position. He felt that the time had come in the course of an agreeable voyage to part with pleasant company. The many years during which he had lectured in surgery had been full of pleasure and profit, to himself at least, because the audiences were always so interested and so responsive. Many a time he has said and wishes again to repeat the statement that medical students are the best of any class of professional students, because they so unreservedly give their time, energy and enthusiasm to the work in hand. It is no uncommon thing to find men who were known to be loafers in their respective universities come into a medical school and set up for themselves a new record, a new standard and a spirit of sincerity and devotion formerly entirely foreign to their natures. The spirit of the students had always affected and inspired him to do more and better work in this beloved profession. The present occasion was not a separation but the beginning of a new relationship in which the men before him were to go out into the world and add a bit to their knowledge of disease, and in this respect he hopes henceforth to find leisure and become a fellow-student. He was glad that his successor and those associated with him were graduates from these benches, and felt sure that they would receive the same kind of consideration from the students that he himself had always experienced. When Prof. Bull had finished F. D. H. Coerr, representing the third and fourth year classes, in a very fitting speech presented a silver loving cup. In replying Dr. Bull said that he wished for the voice, hands, feet, and lungs of those before him in order that he might show his gratification. Never before had he received such a "send-off," save possibly once when in college he was disciplined by the Faculty and given a leave of absence. He wished all before him a pleasant vacation and an affectionate farewell.

Bust of Dr. Helmuth.—A bust of the late Dr. William Tod Helmuth was unveiled in the surgical amphitheatre of Flower Hospital, in connection with the commencement exercises of the New York Homeopathic Medical College, which occurred last Thursday.

Low Temperature of Milk Required.—A letter sent out on May 10 by Dr. Darlington, Health Commissioner, to all milk dealers and railroads entering the city, says that all milk, the temperature of which is higher than 50° F. will be seized and destroyed, and the offending persons prosecuted. The letter refers to Section 53 of the Sanitary Code, relating to adulterated milk, and said that hereafter that section would be enforced. When he announced that the letter had been issued, Dr. Darlington said that more than 2,000,000 quarts of milk come into the city daily, and that fully 4,000,000 persons are supplied. He believed, he said, that 25 per cent. of the deaths among babies in the summer was due to milk rendered impure by its high temperature. As long as the temperature of milk is kept below 50 degrees, there is little, if any, danger, he said, but when the temperature rises to 55 or 60 degrees, the germs split up and multiply with great rapidity. All milk above

50 degrees will be destroyed, and violators will be liable to a fine of from $25 to $500. Dr. Darlington has had his milk inspectors equipped with State authority, and they are investigating the dairies throughout the State.

PHILADELPHIA.

Address by Dr. Freeman.—Dr. Rowland G. Freeman, of New York, addressed the Philadelphia Pediatric Society at the meeting of May 10 on "The Feeding and Care of Children After the First Year." At the close of the meeting a reception was tendered Dr. Freeman at the Hotel Stenton.

Nurse Added to Staff of Normal School.—An innovation by the Keystone State Normal School at Kutztown, Pa., is the addition to the staff of a trained nurse who will attend to the wants of students that may be taken ill while at the school. Miss Mabel Brown, formerly head nurse at the Allentown hospital, has been selected for the place.

Trained Nurses in Convention.—The seventh annual convention of the Nurses' Associated Alumnæ of the United States was held in the Drexel Institute, May 12 to 14. The Association and its affiliated societies control a membership of about 5,000 nurses. One of the chief objects is to secure state registration of trained nurses.

Health Report.—The number of cases of typhoid fever for the week ending May 7, though abnormally high, continues the steady decrease that has obtained during the past four weeks; in this time the new cases have fallen from 389 to 277. The total number for the year is now 3,711. A large number of merchants, manufacturers and others to whom the Trades League sent letters asking them to provide filtered, boiled or spring water for the use of their employees have made favorable reply. During the week quoted, the deaths from pneumonia equaled those from pulmonary tuberculosis, there being 86 of each.

Pennsylvania Society for the Prevention of Tuberculosis.—At the annual meeting held May 4, Dr. Howard S. Anders was elected President and Dr. Ward Brinton, Secretary. Dr. Anders decried the use in street cars of the old-fashioned velvet cushions, saying that they contain typhoid, tubercle and other bacilli. He also stated that the society had protested against the methods of street cleaning now in vogue and had suggested that this be done early in the morning when but few people were on the street; the bureau of street cleaning has as yet made no reply. The society has been informed by the authorities that it is difficult to enforce the anti-spitting ordinance as the policemen pay but little attention to it; councils will not make an appropriation for maintaining special officers for this purpose.

Illegal Practitioners.—Several arrests have been made as a result of the stand recently taken by several of the local societies and the State Board of Medical Examiners. One druggist has been held for court; he is a graduate physician but has failed twice to pass the State Board. The head of an electrotherapeutic institute was arrested for obtaining money by false pretense; he was released by the magistrate, who held that the promise of cure by electricity was not illegal. A member of the senior class of Medico-Chirurgical College has been expelled by that institution for practicing medicine illegally and has since been arrested.

Large Hospital Deficits.—Nearly all the hospitals in the city are confronted by unusually large deficits for the past year. The largest is that of the Pennsylvania hospital which was run at a loss of $33,692.90. The deficit is in every instance attributed largely to the increased cost of foodstuffs, fuel and other necessary supplies. The unusually large number of typhoid fever patients was also a drain on many of the institutions. In reality many of the hospitals are beggaring themselves by the indiscriminate treatment of an increasing number of free patients. It is particularly unfortunate that the large deficits should come at the time when so many of the hospitals are needing new buildings and equipment.

Gastro-enterostomy for Supposed Carcinoma.—At the Philadelphia Academy of Surgery, May 2, Dr. John H. Gibbon reported a case of supposed carcinomatous obstruction of the pylorus nine months after posterior gastro-enterostomy and exhibited the patient. Dr. Gibbon said he reported the case for three reasons: (1) To show that it was a difficult matter to differentiate gastric ulcer from gastric carcinoma when the ulcer is infiltrated, even when the abdomen has been opened; (2) to show the advantage of doing gastro-enterostomy even in the presence of apparently hopeless malignant disease; (3) to explain why recovery occurs after supposed cases of gastric cancer. The patient was a woman thirty-eight years of age who had exhibited gastric symptoms for some eight years. Benign obstruction of the pylorus was diagnosed. When the abdomen was opened a pyloric mass the size of a lemon was found and the glands in the lesser omentum were enlarged. The diagnosis was changed to that of malignant disease and gastro-enterostomy was done with the intention of doing later a partial gastrectomy if the condition of the patient so improved as to warrant it. The patient has markedly improved since the operation; she has gained about 30 pounds and is now the picture of health. The after-history of this patient leaves no doubt in the mind of Dr. Gibbon that he was dealing with an indurated gastric ulcer.

Obituary.—Dr. William Barton Hopkins, the well-known surgeon, died on May 4 after an illness of little more than forty-eight hours. He was on his way south to join a friend on a pleasure tour when he was seized with cholera morbus and survived but a short time after reaching home. Dr. Hopkins was surgeon to the Pennsylvania Hospital and to the Orthopedic Hospital and Infirmary of Nervous Diseases; for years he was surgeon to the Episcopal Hospital. His surgical writings, particularly his book on Fractures, have been widely read. Dr. Hopkins was prominent socially and was a member of the Rittenhouse, Country, New York Yacht, Corinthian Yacht, and numerous medical clubs. He was a grandson of Dr. Samuel Hopkins and a grandnephew of Dr. John Rhea Barton.

Dr. ROBERTS BARTHOLOW, professor emeritus of materia medica, and therapeutics and hygiene in Jefferson Medical College, and widely known as an author of medical works, died last Tuesday at his home, 1527 Locust street, Philadelphia. He was seventy-three years old. Dr. Bartholow was born in Maryland and was graduated in medicine from the University of Maryland in 1852. He served as medical director in the army, in Utah, in 1857. During the Civil War he was first medical director on General McClellan's staff, and later chief of various army hospitals. After serving on the faculty of Ohio Medical College he came to Philadelphia, and for many years was an active member of the Jefferson College faculty. He belonged to many learned societies at home and abroad.

CHICAGO.

Examination of Medical Officers Held.—An examination of candidates for medical officers for the Illinois National Guard was held at Rush Medical College, April 30. Eight candidates took the examination; of these, five were for the naval reserves, two were dental surgeons, and one examination was promotional. The range of subjects included anatomy, physiology, chemistry, materia medica and therapeutics, pathology and bacteriology, hygiene and sanitation, military surgery and practice of medicine. The naval candidates were examined on naval hygiene and sanitation, and the dentists on anatomy, physiology and dentistry.

Death Rate in April.—The death rate for last month was, with three exceptions, the lowest on record. The 2,486 deaths reported during the month represent an annual death rate of 15.68 per 1,000. The great reduction, as compared with 1903, is in the deaths of children under five, and amounts to nearly 30 per cent.

Honor Founder of Hospital.—Celebrating the occupancy of the new dispensary of the Chicago Lying-in Hospital, the nurses and internes presented a gold loving cup to Dr. Joseph B. De Lee, founder of the hospital.

Branch Hospitals.—Hospitals in several different sections of the city, built by the County and maintained as branches of the County Hospital, are proposed by President Henry G. Foreman, President of the County Board. The plan was outlined at a recent meeting, and was favorably received by the members. The plan is to submit to the people of the County at the election next fall the question of a bond issue for the creation of three branch hospitals, and the construction of new fireproof buildings in all instances where the County does not possess fireproof buildings more than two stories in height.

Arteriosclerosis in Its Relation to Life Insurance.—Dr. Wm. Cuthbertson read a paper on this subject before a recent meeting of the Chicago Medical Examiners' Association. Among other things, he stated that when once this disease was established, its onward march was sure, and its arrest or cure was not possible by any therapeutic measures known to medical science at the present day. There were remedial measures at the command of the profession, such as nitroglycerin, the iodide of potash, etc., which would mitigate the severity of the symptoms and prolong life for a longer or shorter period; but this fact did not lower the mortality rate, or which was of more importance to the profession, decrease the risk or lower the expense of the companies in whose employ physicians were. Heretofore too little attention had been paid to this disease, both by the internists, and by medical examiners, and the fault lay in the early medical training of physicians, which led them to look upon arteriosclerosis only as a disease of middle or particularly late life, presumably associated with intemperate habits and all that went with them, such as syphilis, undue exposure, etc. Medical literature of recent years showed an awakened interest in this form of disease, and augured well for the intelligent, studious examiner, to be amply forewarned and forearmed in regard to a malady which to the author's mind had been an important factor in limiting the life expectancy of many a risk which had been passed by the examiner in the past as first class. The author then proceeded to consider the methods by which the physician could determine its presence either in its incipiency or after it had progressed to a well-marked stage. He considered the etiology, symptoms and diagnosis. He said that Dr. Carl Beck relied on the X-rays in detecting a sclerotic condition of the arteries and determining whether it was local or diffuse. Neusser called attention to marked gastro-intestinal symptoms and to the abdominal variety of angina pectoris with burning pain deep in the epigastrium radiating over the thorax. In a recent article, Stengel called attention to the occurrence of an increased blood pressure as one of the earliest signs of this disease. He pictured cases of pseudoanemia with high arterial tension, and urine of alternately high and low specific gravity, and containing a number of cylindroids, as well as an increase in the total amount of urine. Suker and other oculists had emphasized the examination of the eyes in these cases, by which an early diagnosis could be made from the retinal changes, there being a thickening of the retinal arteries, and a compression of the veins where they were crossed by the arteries. Suker says: "The eye is the only place where one can get a direct view of the blood vessels; and hence an ophthalmologic examination should early be resorted to in all suspected cases." Stengel, in the article above referred to, says "When the heart is especially affected, symptoms may be in evidence early. Arrhythmia, increased force of the apex impulse, and suggestions of dyspnea are the most important of these." With the examiner bearing these points of diagnosis in mind, a suspicion of arteriosclerosis should be awakened early, and if the symptoms are not sufficiently pronounced to warrant a rejection, the interests of the company may be conserved, and no injustice done the applicant, by postponing him for further observation.

The Nerve Hygiene of School Children.—In a paper on this subject, Dr. Walter M. Fitch said that one of the most serious health problems now before the profession is the one of the enormous increase of insanity and neurasthenia. In view of this fact, the study of the development of the nervous mechanism and of the various phases of strain and stress put on it during growth becomes of paramount importance. The education of the modern child is of necessity a forcing process. The child must be prepared in early life for some form of industrial career. If not well prepared, for early industrial achievement, his success in life is more than doubtful. There is great importance in the method of teaching, but the strain of continuous nervous effort through the period of development profoundly influences the health of the nervous system throughout life. The medical guardians of the growing child are often careless in their watch on his health. Not only is his work in school allowed to be pushed to the verge of exhaustion, but unwise parents are permitted to add to this work an extra strain in the form of music study. The effect of this is the development of a predisposition to nervous breakdown. A second fault in medical practice recorded against the profession is that physicians often fail to remove bodily causes of peripheral nerve irritation. These irritations are usually slight, but become wearing and exhausting to the nervous system because of their persistency. The chief sources of peripheral irritation are phimosis, eye-strain, and the ovarian irritation of puberty in girls. The third fault in medical practice is the common neglect of the condition of subnormal respiration. This may be due either to obstruction in the respiratory passages, as from adenoids, or to weakness of the muscles of respiration, or to both causes; but suboxidation of the blood produces a condition of nerve poisoning which

greatly interferes with the normal development of the neurons. Broadly speaking, a broken or exhausted nervous system can never be restored to the normal, whether the derangement be structural or nutritional. One must look for the solution of this problem to hygienic measures adapted to the needs of the organism during its growth. One may prevent where he cannot cure.

GENERAL.

Antidote for Snake Bite.—It was announced at the annual banquet of the Association of American Physicians in Washington, on May 10, that as the result of researches by Dr. Noguchi, of Japan, working under a grant from the Carnegie Institution, a positive antidote for rattlesnake venom had been discovered. The announcement was made by Dr. S. Weir Mitchell, of Philadelphia, who read a letter from Dr. Noguchi, who is now at the Serum Institution in Copenhagen, where he has been making his researches for the past several months. From the nature of the announcement it is believed by the physicians who were present that the serum which Dr. Noguchi says he has discovered will prove to be of great value in human therapeutics. The fact that the announcement of the discovery was made by Dr. Mitchell is of particular interest, as more than forty years ago the latter worked long and unsuccessfully on the problem that has been solved by Dr. Noguchi. In his experiments he found that guinea-pigs that had received injections of rattlesnake poison up to twelve times the amount necessary to produce death and had then received injections of the anticrotalic serum experienced no evil effects from the poison. Dr. Noguchi also believes that this discovery will lead shortly to the discovery of serums for other poisons, and that it will not be long before the serums will be placed on the market, particularly in regions where the rattlesnake is always a factor to be reckoned with.

Money Where it Will Do the Most Good.—The Johns Hopkins Hospital has received its promised gift of $500,000 from John D. Rockefeller. The gift consists of $290,000 in cash and $210,000 in three classes of gilt-edged securities. Mr. Rockefeller surprised the trustees by sending an additional $1,600. This, in accordance with Mr. Rockefeller's business ideas, represents the interest on the gift from April 4, the day he announced it. With a list of the securities was sent a voucher for them to be signed and a brief note from Mr. Rockefeller, through his agent, saying he had made good his promise and expressing the hope that "it will do good to your most excellent institution." The securities will be retained and the money will be used to rebuild on the lots owned by the hospital in the burned district. Some of the lots will be sold and on others the hospital will now rebuild as rapidly as possible. The money received from Rockefeller represents about the hospital's loss by the recent fire.

Funds for the Hartford Hospital.—Probably one of the largest benefit performances ever given in the country was that for the Hartford Hospital on May 9 in Hartford, Conn., when more than $25,000 was realized and will be turned into the funds of the hospital. The performance was given by professionals headed by Marshall P. Wilder, who went to school in that city. The performance was attended by an immense crowd at Poli's Theatre, and was made one of the social events of the season.

Suits for Typhoid Damage.—An association has been formed in Butler, Pa., to bring actions for damages against the water company, the damage having been caused by the typhoid epidemic which lately ravaged that town, and the allegation of the complainants being that it was the result of negligence on the part of the water company in failing to protect the sources of its water supply and to maintain the purity and potability of the water it distributed. This is extremely interesting, and as the procedure is a new one the results of which can scarcely be forecast, it will be followed with attention.

Yellow Fever and the Mexican Frontier.—One case of yellow fever was discovered by the health authorities at Vera Cruz on May 9. The patient was sent to San Sebastian Hospital, and measures taken to prevent a spread of the disease. This is the first case for several weeks. The authorities are doing excellent work in house to house disinfection. On April 10 Dr. George R. Tabor, Texas State Health officer, received a telegram from Dr. Eduardo Liceaga, President of the Superior Board of Health of Mexico, saying that he would permit this State to send quarantine agents to that country. This is the concession Texas has been fighting for.

Stanley's Observations on Malaria.—The recent death of the African explorer, Sir Henry M. Stanley, brings to mind some curious observations made by him during his trip across that continent for the relief of Emin Pasha, and published in his work entitled "In Darkest Africa," 1890. Stanley found that the members of his party were attacked by malaria at all altitudes from 0 to 5,000 feet, and rather more frequently in the open country than in the jungles. It was his impression that symptoms of the fever were more prevalent while descending streams in boats than when ascending the same and that the direction of the wind had some influence. The most noteworthy remark was that of Emin Pasha himself, who, in early life, had received a medical training, quoting Stanley's own words: "Emin Pasha informed me that he always took a mosquito curtain with him, as he believed that it was an excellent protector against miasmatic exhalations of the night."

Hospital Appointments.—The following men have won appointments at St. Joseph's Hospital, Baltimore, for one year: Dr. H. C. Coburn, Jr., Columbian University, '03; Dr. Walton H. Hopkins, University of Maryland, '04; Dr. J. M. Lynch, University of Maryland, '04; Dr. C. T. Ralls, Physicians and Surgeons, Baltimore '04; Dr. Jos. J. Boucher, Physician and Surgeons, Baltimore '04.

OBITUARY.

Dr. CLINTON CUSHING, a well-known surgeon and gynecologist, died in Washington May 10. He had a wide reputation on the Pacific Coast, was a member of the faculty of the University of California, and maintained a private sanitarium in that State. Of late years he had retired from active practice and spent the winters in Washington.

Dr. ORISSA W. GOULD, well known for her philanthropy and missionary work, especially among the poor of the East Side, died on May 3 of cerebrospinal fever at the New York Hospital. On Sunday evening she was stricken at the Women's Missionary Society, 162 Second avenue, this city. She was removed to the hospital, where she died. Dr. Gould was forty-three years old. She began the study of medicine at an early age, and was graduated from the Women's Medical College of New York.

Dr. WILLIAM H. MCGEE, a leading physician of Warren County, N. J., died at his home in Belvidere last Wednesday, aged fifty-six years. He was a member of the Warren County Medical Society and resident physician of the Pennsylvania Railroad Company.

SOCIETY PROCEEDINGS.

ASSOCIATION OF AMERICAN PHYSICIANS.

Nineteenth Annual Meeting, held at Washington, D. C., May 10 and 11, 1904.

FIRST DAY—MAY 10TH.

Presidential Address.—The session was opened by the President's address delivered by Dr. Wm. T. Councilman, of Boston.

Increase of Membership.—Dr. Councilman said that an increase of membership seemed desirable, yet there were certain difficulties. Too great a number would take away the helpfulness of the Association, because pathologists and laboratory workers would not be brought in that intimate contact with clinicians which now constitutes the most beneficial and characteristic feature of the Association. Even with the present limitation of membership it seemed possible to admit certain of the young active workers whose presence would be eminently desirable.

Honorary Membership and Retirement.—Dr. Councilman suggested that after twenty years of active membership most men had ceased to be actively productive of new observations, so he suggested that each year those who have been twenty years members be placed on the roll of honorary members, with all their old privileges of discussion and presentation of cases, but their places on the active list to be taken by younger men. This would, after two years, the Association having been founded in 1886, give places for an average of seven new members each for many years. In this way the activity of the Association can be maintained and its usefulness to medicine in America not allowed to wane. As it is, the amount of good that has been accomplished by the Association since 1886 can scarcely be overestimated. It has been a great factor in the wonderful progress that has come in American medicine in these latter years.

Increased Dues.—The treasurer then announced that owing to the occurrence of a deficit the annual fee for next year would be $15 instead of the usual $10.

Reed Memorial Committee.—Dr. Janeway, of New York, and Dr. Wm. H. Welch, of Baltimore, seconded the nomination of a committee to cooperate with the trustees of the fund for the erection of a suitable memorial to Dr. Walter Reed, the yellow fever expert. Dr. Welch said that the movement is now well under way and though the character of the memorial has not been decided upon, much was being done to secure interest in it generally in the medical profession of the country.

Influence of Extract of Suprarenal Glands.—The first scientific business was the reading of a paper by Dr. S. J. Meltzer, of New York City, on the influence of extract of suprarenal glands on elimination and absorption, which he illustrated by specimens of tissues and exudates. In frogs if enough strychnine be injected so that ordinarily the animal would suffer from tetanus the simultaneous injection of adrenalin will either materially delay the occurrence of the tetanic phenomena or will prevent it entirely. This does not seem to be due to the neutralizing chemical action of adrenalin upon the strychnine but upon some biological action. If adrenalin be given to frogs a condition resembling paralysis supervenes. The animal does not move and even when placed on its back, does not right itself. This paralyzing action seems to neutralize the effect of the strychnine. In rabbits the injection of enough strychnine normally to cause fatal tetanization, if followed by adrenalin injections, will have no effect, or the effect will be delayed for hours. These observations seem to point to delay of absorption.

Fluorescence Experiments.—Fluorescein causes coloring of animal tissues—the cornea, the mucous membranes, etc., without hurting the animal. If adrenalin be injected just before the injection of fluorescein the coloring of the tissues is much slower and even less complete. With regard to elimination of the fluorescein through the kidneys there is distinct evidence of delay. On the other hand, the substance is deposited much more slowly in such internal tissues as the liver and the kidneys and more of it is found to be retained in the blood serum.

Practical Applications.—Dr. Meltzer suggested that adrenalin might be employed with advantage to delay the elimination of certain drugs, the retention of which in the organism is too brief to accomplish the purpose expected of them. On the other hand, the danger of delay of elimination of toxic substances, as during nephritis, might be dangerous and when toxemic conditions are present adrenalin will have to be used with more care than is now the rule.

Therapeutic Administration.—Dr. W. Gilman Thompson, of New York, said that in cases of typhoid fever particularly, where he administered adrenalin for hemorrhage, he had never seen any effect produced by the substance either on the amount or the character of the urinary secretion. It seems unlikely then that in ordinary therapeutic doses it can have the danger that Dr. Meltzer suggests.

Brief Action of Adrenalin.—Dr. Hobart A. Hare, of Philadelphia, said that seeing the very brief action of adrenalin it seems utterly unlikely that any serious delay of elimination can be brought about or that the action of drugs over a longer time than normal can be secured by means of it, unless it be administered more frequently than is now the case. Dr. Hare has, however, seen adrenalin produce apparently greater susceptibility to infection. In tonsillitis, for instance, when used in a spray to decrease congestion and lessen pain the surface covered by exudate is apt to be increased in some cases and certain of the cervical glands, even of the deep chain, may become affected. Whether it may not have a like effect upon the nose must be borne in mind. When used hypodermically, though with all the precautions that usually save the patient this inconvenience, the occurrence of sloughs is by no means unusual and seems to be due to the loss of tissue resistance under the action of adrenalin.

Duration of Action.—Dr. Meltzer, in closing the discussion, said that the length of the action of suprarenal is as yet unknown. On striate muscle fiber it seems to act for a very brief period; on unstriated fiber for a longer period. On the endothelium of capillaries, which is of contractile nature, its action seems to be prolonged. The action time of the substance is now actually being studied and was really one of the problems looked into in the present investigation. The practical applications suggested are only meant to call the attention of medical men to certain lines of thought.

Polyuria in Typhoid Fever.—Dr. M. Howard Fussell, of Philadelphia, reported a case of typhoid fever in which polyuria, to a very marked degree, set in about the tenth day. On the twelfth day the patient passed 7 quarts of urine; on the fourteenth day 15 pints and more than 3 quarts every day afterward, until the temperature became normal. There were no abnormalities of the urine and the normal quantity of urea was passed. The patient had no history of ever having had polyuria before and has had none since. There were very severe functional nervous symptoms amounting practically to attacks of hysteria during the polyuria. The patient was very restless, being compelled to pass 6 ounces of urine every hour or so and the skin became dry. Polydipsia followed the increase of urination but did not precede it. The patient had taken salol, but this, later,

when in health, showed no tendency to increase his urine. Analysis of other cases shows Dr. Fussell that polyuria in the convalescence from typhoid fever is not as common as would be believed from the statements in text-books.

Retention of Water in Fevers.—Dr. George Dock, of Ann Arbor, Michigan, said that the old theory that water is retained in fevers, that is, that febrile patients have a notable disproportion between the amount of urine passed and the liquid consumed, would seem to need investigation. Certain it is that the use of the bath has materially increased the amount of urine, as a rule, and that this has something to do with its good effect. Cantani tried to treat patients by large amounts of fluids and found that when 14 quarts of liquid were given about 12 quarts passed off in the urine. The specific gravity in cases of polyuria thus induced is not very far from normal, in Dr. Dock's experience, and there is not the thin, light-colored urine that might be expected.

Polyuria and Abdominal Pain.—Dr. Osler, of Baltimore, said that many painful conditions of the abdomen are associated with polyuria and this may be held to account, in some measure at least, for the polyuria of typhoid in its latter stage. Individual patients are very variable in this respect, however. Aneurism of the abdominal aorta is very frequently associated with polyuria. Other tumors may have a like effect, especially in neurotic individuals in whom, for some not well understood reason, the tendency to variability of the urinary flow is quite marked.

Copious Water in Typhoid Fever.—Dr. Wm. S. Thayer, of Baltimore, said that in Cleveland Dr. Cushing has been treating typhoid fever cases with all the water they want. Of late years there has been a well-marked determination to give typhoid patients frequent drinks, yet they never seem to be satisfied. Dr. Cushing has a small reservoir of fresh water placed beside the patient's bed and from it a tube, through which, without disturbing himself or others, the patient may suck water whenever he wishes. In this way enormous quantities of water are consumed, sometimes several gallons a day. There is a corresponding increase in the amount of urine passed. One patient passed nearly 500 ounces in twenty-four hours. The result of this treatment has been very favorable. Patients are less restless and the mortality is lower. The idea of washing out intestines and the blood of toxic material seems to be thus accomplished to the satisfaction of patient and physician.

Dr. Fussell, in closing the discussion, said that the polyuria seemed to precede and be the immediate cause of whatever polydipsia was present in the case.

Venous Thrombosis in Typhoid Fever.—Dr. Wm. S. Thayer, of Johns Hopkins Hospital, analyzed the 39 cases of thrombosis in typhoid fever which have occurred at that hospital. Five were fatal, two of them through embolism of the lung. Twenty-six of the cases occurred on the left side, 5 on the right, 9 on both sides. In 21 cases the femoral vein was affected, in 5 the popliteal, in 5 the iliac and in 5 the veins of the calf. One occurred during the first week, two during the second, some scattering cases up to the thirteenth week but most cases in the fourth, fifth and sixth weeks and after the fever had subsided.

Symptoms and Course.—In all but one of the cases of femoral vein thrombosis there was pain along that vein and in 9 cases there was also pain in Scarpa's triangle. The symptoms always began with striking suddenness though usually before the localized pain there was a general malaise with chill. Some of the chills were very severe. In the case of iliac thrombosis there was sharp abdominal pain with signs of shock, causing the suspicion of perforation. Exploratory laparotomy was done and the true condition ascertained. The patient recovered without complication. Leucocytosis was present in all the cases, in most being over 10,000 white blood cells to the cubic millimeter. Some inflammatory changes in the walls of the veins were found in cases where autopsies were made but it was not decided whether these were not secondary rather than primary. The accepted idea of etiology is the occurrence of phlebitis as a predisposing factor to the thrombosis.

Permanent Disability.—All of the patients under observation at Johns Hopkins have more or less permanent disability as the result of the thrombosis. The leg is distinctly weaker, it is permanently enlarged and feels cumbrously heavy and on much exertion it swells and compels the patient to rest. The acme of discomfort is noticed in the summer time, though some patients complain of cold feet in the winter and of the tendency for the affected limb to go to sleep. Whatever of relief has come in most cases has been the result of the formation of a collateral venous circulation by means of varicose dilatation of veins. In most of the cases the varicose veins are to be seen not only on the leg but also in a triangle on the abdomen the apex of which is the umbilicus and the blood is evidently thus passed to the other side. In cases of iliac thromboses the varicose veins run up above the umbilicus, making anastomoses with the internal mammary veins, also with the axillary. These veins are large tortuous structures and give the usual discomfort of varicose veins for other reasons.

Calcium Salts and Thrombosis.—Dr. Geo. L. Peabody, of New York, said, in opening the discussion, that experiments seem to show that the presence of abnormally large amounts of calcium salts in the blood predispose to the formation of thrombi. The increase of calcium salts is easy to understand in the blood of typhoid fever patients fed exclusively on milk, for milk contains a large proportion of calcium salts. To neutralize the tendency for these to cause blood coagulation the ingestion of citric acid or soluble citrates in considerable quantities has been suggested as a routine practice. As most patients with typhoid fever rather like lemonade, it is not a difficult matter to carry this out.

Preliminary Fever.—Dr. Alfred Stengel, of Philadelphia, said that a set of general symptoms has in his experience nearly always preceded the occurrence of thrombosis. This would seem to show the presence of an infectious focus from which some absorption was taking place and apparently points to the existence of a previous phlebitis. Some of the chills were very severe and there was high fever with a sweat—the whole process partaking of the septic type.

Dr. Wm. H. Welch said that the tendency now is to revert to the old explanation of a preceding localized phlebitis as the cause of the thrombus formation. For a long period Virchow's studies were supposed to have disproved this but the French school have upheld it and have shown of late years that there are excellent reasons for it. One feature that favors it is the occurrence of general symptoms before the local thrombosis shows itself. Especially is there apt to be a marked disturbance of the pulse with the development of a period of extraordinary rapidity, out of all proportion to the temperature at the time, though that may be notably elevated.

No Complete Recovery.—Dr. W. Gilman Thompson, of New York, said that he has never seen anything like complete recovery of the usefulness of the limb after thrombosis. Large varicosities do help the circulation but prove a source of discomfort in themselves. In a recent case in whom, after iliac thrombosis, large abdominal veins had formed, the patient developed appendicitis and the incision had to be carefully planned so as to avoid these vessels, some of them larger than the little finger.

Dr. James Tyson, of Philadelphia, said that in all cases of vascular obstruction pain is a prominent symptom. In angina pectoris in the obstruction of the artery of a leg preceding gangrene even in the ordinary cramps it seems not unlikely that the underlying cause of pain is the constriction of arteries. The subject deserves to be investigated from that aspect.

Disability not Permanent in Many Cases.—Dr. Wm. Osler, of Baltimore, said that in many cases the disability is not so permanent, nor so serious as is said. He has seen cases which recovered completely. In fact, he considers that all who have healthy vascular systems will recover completely. To his students he says, always blame the parents for not having given the patient a good venous system when the prognosis of ultimate recovery does not seem likely to be fulfilled. Venous thrombosis after typhoid is very different to the form known as phlegmasia alba dolens after puerperal fever. Very rarely if ever does the limb become swollen as in this, or so white or tender to the touch. The phlebitis is of mild character and is not extensive.

Clinical Studies in Arteriosclerosis.—Dr. Alfred Stengel, of Philadelphia, said that in spite of the general impression to that effect blood pressure in arteriosclerosis is not necessarily always high. His measurements were made with the Riva-Rocci instrument for determining blood pressure as modified by Stanton. This measures not only systolic but also diastolic blood pressure. Diastolic blood pressure is always high in these cases until the myocardium gives out, when of course, there is a fall. Dr. Stengel's results were confirmed by a manometer applied to a peripheral artery. Sustained diastolic pressure is a very early manifestation of arteriosclerosis. Dr. Stengel also noted the excellent condition of the blood in some patients in whom the rapid development of arteriosclerosis with its characteristic pallor had brought the thought of malignant disease. In these cases the hemoglobin was 80 to 90 and the red blood cells not below 4,000,000. This seems to show that very small arteries, perhaps even the capillaries themselves, are early involved in the arteriosclerotic process. This is of course an interesting problem for which solutions have so far been vainly sought.

Urine in Arteriosclerosis.—The urine in arteriosclerosis in Dr. Stengel's experience shows a very decided tendency to vary greatly from time to time. The specific gravity of the morning urine may be 1.015, that of the evening 1.030 to 1.035. This variability is common, also to the amount of urine passed, even in cases where the absence of any formed elements that are distinctly pathological, shows that the kidneys themselves are very much affected in their secreting substance.

Earliest Sign of Arteriosclerosis.—This, in Dr. Stengel's observations, is always a prolongation or sustaining of the first heart sound. Long before there is an accentuated second sound this sustaining of the first sound will be quite audible.

Dr. Solomon Solis-Cohen, of Philadelphia, said, in the discussion, that a prolongation of the first sound of the heart without any distinct murmur is very common in the early stages of arteriosclerosis. With regard to diastolic tension Broadbent long ago called attention to the fact that very early in arteriosclerotic conditions there was a sustenance of the tension of the pulse between beats. This is evidently the same sign as is now described as high diastolic tension. In the urine of arteriosclerosis Dr. Cohen has noted a diminution of the toxic elements evidently due to the fact that the arterial change prevented so much blood from going to the kidneys and also interfered with the secreting mechanism.

Strychnine in Fever.—Dr. Richard Cabot, of Boston, gave the details of a number of observations in febrile conditions, mostly typhoid fever, some pneumonias and other fever conditions in which strychnine was administered. The blood pressure of these patients was measured with Stanton's modification of the Riva Rocci sphygmomanometer. In none was there any rise of blood pressure following the administration of strychnine, though all the patients received 1/8 grain per twenty-four hours and some of them as high as 1/6 grain. When the strychnine was abruptly stopped no effect either on blood pressure or on their general condition was noted. At times it was noted that the visit of a friend or the coming of the meal tray had a decided effect on blood pressure such as could not be obtained with even large doses of strychnine.

Strychnine not a Cardiac Stimulant.—Dr. Hobart Amory Hare, of Philadelphia, said that though used as such by most of the members of the medical profession strychnine is not a direct heart tonic. It acts by irritating the nervous system and is something like applying a whip to a high-strung horse already putting forth every effort but overloaded. Whatever beneficial action there is from strychnine is due to the equalization of the circulation. If Dr. Cabot's experiments then will have the effect of making many people revise their conviction as to the action of strychnine much will have been done, even though his observations have all been negative.

Beginning of Nephritis.—Dr. Wm. H. Thomson, of New York, said that there is evidently some substance which causes the high blood pressure so often to be observed before the beginning of true nephritis. Apparently it is the action of this substance on the kidney tissues that eventually leads to their degeneration. The action of this toxic substance resembles very much that of suprarenal extract. Only very minute amounts of the substance are required to produce high blood pressure through narrowing of the arteries, probably not more than 1/800 of a grain being required. Dr. Thomson suggests that the beginning of nephritis may be due to some disturbance of suprarenal function. The tendency of suprarenal extract to produce contraction of kidney tissue has often been shown and would serve to demonstrate how contracted kidney comes about. Dr. Thomson's conclusions with some suggestions as to the practical value of the idea in therapeutics he summarized as follows: (1) High tension pulse occurs too early in nephritis to be due to any other cause than the presence in the blood of a general vasoconstricting agent, similar in its properties to adrenalin. (2) Such an agent would also produce constriction of the renal vessels and general shrinkage of the kidneys, causing interference with the excretion of urea. (3) Prolonged presence of such an agent in the blood would lead ultimately to endarteritis with degeneration of the vascular walls and to cardiac changes. (4) Acute cardiac dilatation may occur from the effects of such a general vasoconstricting agent in the circulation before extensive alterations in the blood vessels have taken place. (5) Aconite is the best vasodilator in nephritis, much more effective than the nitrites. Marked increase in the excretion of urea follow its administration in cases of high tension and Dr. Thomson has used it with excellent results.

Illuminating Gas Poisoning.—Dr. W. Gilman Thompson, of New York, analyzed some 90 cases of poisoning due to illuminating gas inhaled accidentally or with suicidal intent. There were 288 fatal cases in New York in 1902, due mainly to the gas stove and its rubber connections and also to the fact that many persons with no knowledge of gas find their way to New York City. The most prominent feature is the change of the hemoglobin into methemoglobin which prevents the red blood corpuscles from any longer fulfilling their rôle as oxygen carriers. Another almost constant blood change is a large leucocytosis. All the fatal cases had

more than 18,000 white cells, the increase affecting especially the polymorphonuclear cells. Some of the cases showed as high as 50,000. One recovery occurred where the leucocytosis had risen to 44,000.

Clinical Symptoms.—All severe cases show coma, but neither the depth nor length of the coma furnishes any positive indication of the prognosis of the case. After a time all of the cases develop fever usually about 103° F. Some very interesting fatal cases show hyperpyrexia, one as high as 110° F. There is always a marked fall in the respiration rate which may go as low as 3 or 4 to the minute. This appears, however, to be of central origin and pneumonias following the inhalation of gas is rather infrequent. Once the patients begin to recover, convalescence is rather rapid, but at times complete recovery is long delayed, and not always can an adequate reason be found for the prolonged prostration.

Nervous Symptoms Most Important.—The nervous symptoms and their underlying lesions are the most prominent features of illuminating gas poisoning. They are apparently due to the carbon monoxide in the gas. The lesions in the fatal cases are found to be softening and edema of the brain, small hemorrhages from the rupture of minute arteries. These latter phenomena are indeed the specific lesions of gas poisoning. In about 7 per cent. of all cases convulsions develop. Some paralysis hemiplegia or hemiparesis is not uncommon. It is often marked by the patient's comatose condition. There is often a softening of the lenticular nucleus.

Dr. S. Weir Mitchell, of Philadelphia, said that illuminating gas was so different in different cities, or even in different parts of the same city, that the clinical pictures presented in cases would necessarily have many features not in common with one another. Until more was known of the definite composition of such gas, it seems idle almost to discuss the symptom complexes and lesions which it produces.

Defibrinated Blood.—Dr. Stengel said with reference to treatment by intravenous injections that in experiments made upon animals in Philadelphia it seemed to be demonstrated that the use of normal saline injections did not avail to save life, though injections of defibrinated blood from the same animal did.

Dr. Kinnicutt, of New York, said it was very difficult to obtain defibrinated human blood always just when wanted and, besides, when it was obtained surgeons were not always able to inject it successfully.

Dr. W. Gilman Thompson, in closing the discussion, said that it was not always the presence of methemoglobin that killed the patient, for at times the blood was not saturated. This had been demonstrated by finding spectroscopic evidences of hemoglobin in certain cases. Besides, at times, there was recovery as regards the blood condition, yet the patients went on to a fatal termination because of their nervous conditions. Warm saline solution often does good in cases of poisoning by illuminating gas, and as it is so handy it should always be given a thorough trial.

Serum for Rattlesnake Bites.—Dr. S. Weir Mitchell, of Philadelphia, read a letter from Noguchi, the Japanese pathologist, who has been working at the University of Copenhagen, under a grant from the Carnegie Institution. After having studied the question of a serum for rattlesnake bites with Prof. Flexner, at the University of Pennsylvania with some encouraging results, he now announces that he has succeeded in preparing goat serum so that it will prove efficiently curative for rattlesnake bites. The serum is prepared by rendering the goat immune to the action of *Crotalus* poison by gradually increased doses.

Etiology of Exophthalmos.—Dr. MacCallum, of Johns Hopkins, discussed the various causes that have been assigned for the prominence of the eyeballs in exophthalmic goiter and showed that they were all insufficient. He then detailed observations which seemed to prove that exophthalmos is due to the contraction of a cone-shaped structure surrounding the eyeball and containing some unstriped muscle fibers. The contraction of this throws the eyeball forward. Dr. MacCallum's work was made possible by the construction of an instrument by means of which the slightest projection of the eye bulb can be measured and even the rhythmic projection of it, due to pulse and respiration, can be clearly demonstrated.

Diabetes Insipidus.—Dr. Thomas B. Futcher, of Baltimore, described and analyzed the series of cases of diabetes insipidus which have occurred at Johns Hopkins Hospital since its inception. Altogether they are only seven in number, six in the hospital and one in the dispensary. There have been over 7,000 patients in the hospital, so that diabetes insipidus is actually and comparatively a very rare disease. Out of these seven cases four had had syphilis and all of these improved in the administration of potassium iodide. The other causes seem to be heredity, which has been confirmed by the observation of a family for four generations among the ninety members of which more than one in five suffered from the disease. The tendency for the affection to be a sort of equivalent for tuberculosis in preceding generations seemed to be established. The affection occurs much more frequently in males than in females and is most frequent in the decade from thirty to forty years. Perhaps one reason for this is that it is just at this period that syphilitics are most likely to suffer from nervous symptoms due to cerebral lues. The cures effected by the use of potassium iodide are often very marvelous, and even in one case where syphilitic history was denied there was clearing up of most symptoms in a few weeks with a gain of nearly twenty pounds in weight.

Tuberculosis and Diabetes Insipidus.—Dr. Wm. H. Thomson, of New York, said that in one case under his observation a fatal termination showed at autopsy the existence of a miliary tuberculosis. As some of the tubercles were on the floor of the fourth ventricle, where Claude Bernard had found a center for diabetes insipidus just in front of that for diabetes mellitus, this seemed to be the pathological basis for the disease.

Potassium Iodide.—Dr. James Tyson, of Philadelphia, said that this drug often seems to do good even where syphilis is not present. A young fellow whom Dr. Tyson first saw at the age of twelve years is now, after ten years, completely rid of his diabetes insipidus, the main treatment employed being potassium iodide.

Dr. Dock, of Ann Arbor, Mich., said that the more suspicious the previous history as to syphilis the better the prognosis in these cases. In other cases apparently developing on a neurotic basis the outlook is not favorable.

Diabetes Insipidus Not Rare.—Dr. Abraham Jacobi, of New York, said that among children at least diabetes insipidus is by no means a rare disease. It occurs in connection with chorea and other convulsive incidents in child life. Occasionally it is seen after severe whooping cough in delicate children, when it is usually concluded to be due to minute cerebral hemorrhages resulting from the convulsive coughing. In boys from seven to twelve years it is not infrequent as the result of falls upon the occiput. Tumors of the brain cause it. Heredity plays a rôle in its etiology, not only directly but also by the transmission of nervous constitutions. It is often associated with hereditary syphilis. Potassium iodide is the most generally useful remedy in the disease, but in some cases where it fails ergot controls the condition, or at least diminishes the

amount of urine passed. It seems to be especially of use in the non-syphilitic cases.

Unsuspected Irritation of Internal Abdominal Ring.—Dr. Charles G. Stockton, of Buffalo, reported some twelve cases in which irritation at the internal abdominal ring in persons with a hernia and wearing an ill-fitting truss gave rise to peculiar discomfort, sometimes amounting to absolute pain, which led to the diagnosis of other serious abdominal conditions. Now, when so much attention is paid to intra-abdominal pain of any kind, this group of reflex cases is especially important. Since Dr. Stockton has come to recognize it the number of cases seen has increased and it seems clear that many more persons are suffering from it than might be expected. The treatment of the condition, which also at once serves to confirm the diagnosis is to apply a well-fitting truss.

Prolonged Hysteria.—Dr. S. Weir Mitchell reported a case of a severe type of hysteria which has been under his observation since 1876. The patient went through a number of varied movements as the result of his hysteria. One was the pendulum swing of his arm to and from the body some 150 times to the minute. Later a rotary movement of the same arm developed, the hand being carried round the shoulder over 100 times to the minute. Notwithstanding the apparently exhausting character of these movements persistently carried on during his waking hours, the patient did not seem to suffer from fatigue and remained in excellent health. If the movement was stopped the patient suffered intensely and there was a tendency at least often completed to the development of a generalized convulsive movement. All ordinary drug treatment failed and the patient visited many clinics and physicians. Finally hypnotism was tried but the patient had a decided objection to it. Some 30 seances were held but he was never brought so completely under its influence as to lose sense perception. After a time, however, his convulsive movements became less and then disappeared completely, so that for some three months he was able to take a position as assistant librarian at Jefferson Medical College, Philadelphia. At the end of that time, however, there was some difficulty causing emotional strain and the old-time convulsive movements reappeared. This time he absolutely refused to be treated by hypnotism, saying that since the Lord had visited him with the affliction he must needs bear it. After a time Dr. Weir Mitchell himself succeeded in persuading him to submit to hypnotism again and he was somewhat improved, but he seemed to be less comfortable generally when the movements were not going on. Perhaps he lacked the attention which, because of his very peculiarly interesting condition, was showered upon him. His death took place suddenly and without any apparent cause.

Autopsy Findings.—The autopsy was made very carefully and with minute completeness by Dr. Spiller, who found absolutely nothing that could be considered pathological. It seems difficult to Dr. Mitchell to understand how these rapid movements could continue for so long without being registered on the cerebral cells. Of course the arm area of the side opposite the convulsed arm was minutely examined. The case is ideal as a document in hysteria. No other pathological condition had supervened to spoil any characteristic changes of hysteria that might be present and yet absolutely nothing even suspicious was found. This is not so surprising, however, when it is realized that there are so far as known no specific pathologic lesions for chorea or the convulsive tics or paramyeclonus multiplex and related syndromes described of late years.

Observations on Subliminal Consciousness.—Dr. Morton Prince, of Boston, gave some details of recent observations on a young man suffering from hysterical manifestations including anesthesia and paresis. While he could not feel he yet could be made to see reflected in the surface of a glass of water in which he was told to look, a hand on which he could count the number of times he was touched. His first attack occurred after a fright one night when he was passing a cemetery on a lonely road. Whenever in hypnosis he could be made to go back in his history beyond that night he did not suffer from the anesthesia and other accidents which had developed at that time, so that there seems to be a record in the brain of successive states of consciousness and the later conditions may rule the external sensibility.

Dr. Horatio C. Wood, of Philadelphia, said that the absence of a record on the cerebral cells of movements accomplished is not surprising. It is the voluntary control of cells that would seem to register itself while the cells are protected from interference with their normal functions by their lower connections in the nervous system. Chorea and convulsive movements generally seem to be the assumption by voluntary muscle of the character of such involuntary muscles as the heart and the unstriped muscles generally which execute rhythmic movements.

Unusual Forms of Acute Myelitis.—Dr. B. Sachs, of New York, reported some anomalous cases of acute myelitis which seem to throw light on the recent discussions with regard to forms of infectious myelitis and cases where no infection can be traced, yet without syphilis or trauma in the history. In one of his cases the symptoms that developed were evidently of the nature of a spinal apoplexy due to the rupture of a blood vessel in the cord in a person suffering from degeneration of arteries. The existence of such changes cannot be doubted and the arteries of the cord may rupture as well as the brain. Such cases are undoubtedly rare, yet their possibility must ever be taken into account.

Streptococcic Myelitis.—In the case of a young girl the symptoms of myelitis developed just before the occurrence of a series of multiple abscesses in various parts of the body. The first of these abscesses in the inguinal region, was thought to be tuberculous and connected with the spine, which did not prove to be the case, however. In all the other abscesses streptococci were found practically in pure culture. It was concluded then that the focus in the cord was also of streptococcic origin. It was proposed to test this by lumbar puncture, but Dr. Sachs preferred not to, as there seemed to be danger by lessening the pressure within the spinal canal of generalizing the streptococcic process. The most interesting feature of the case is that the girl's life was not only preserved but there was some return of function in the leg movement, which had been lost. The severity of the symptoms, together with the inevitable diagnosis of its streptococcic etiology, seemed to justify the most unfavorable prognosis.

Spinal Ischemia.—Dr. Wm. H. Welch, of Baltimore, said in discussing Dr. Sachs' paper that sometimes there seemed to occur a contraction of the arteries supplying special segments of the cord producing a true ischemia and that such an incident led to softening, if there was persistence of the condition, and also to the development of a set of symptoms closely resembling those of transverse myelitis of infectious or other origin. The distribution of the spinal vascular system was for purposes of protection of the delicate nerve substance and such that this accident became possible under certain circumstances.

Infectious Neuritis and Myelitis.—Dr. James J. Putnam, of Boston, presented the details of some cases

of infectious myelitis which showed the insidious nature of this affection and its tendency to get well at times under conditions that would seem to justify the worst prognosis. The advance of paralysis upward was sometimes to such an extent that even respiration was ultimately interfered with. The paralysis is, however, more commonly confined to the legs.

Cerebrospinal Meningitis Epidemic in Children.—Dr. Henry Koplik, of New York, said that this subject is now of special interest, owing to the occurrence of various foci of the disease in many parts of the country. Certain symptoms that have been recently described are of value for the differential diagnosis, others are not. The Babinski toe reflex, for instance, is usually not present in epidemic cerebrospinal meningitis, while it is usually present in tuberculous meningitis, thus constituting a valuable aid to diagnosis. The Kernig sign is not of special significance. Papillitis is quite common in tuberculous meningitis and is very rarely seen in cerebrospinal fever. This supplies some of the most valuable differential criteria between the two diseases. The leucocyte count of cerebrospinal meningitis is invariably very high, on the average above 24,000, while in tuberculous meningitis it is present but is much lower. The height of the leucocyte count has no special significance for prognosis, however. The *Diplococcus intracellularis* of Weichselbaum is found to be present in most cases. A comparatively low leucocyte count is found in certain forms of the disease, in which at autopsy the lesions are confined to the occipital region. These cases have lately been separated from the others by Still and the symptom-complex he suggested seems justified by further investigation.

Treatment by Lumbar Puncture.—Dr. Koplik considers that lumbar puncture should be a routine treatment especially in very young children suffering from the disease. The evacuation of some cerebrospinal fluid always brings with it some relief of symptoms, such as coma, and in the interval of better feeling thus occasioned there is not infrequently established a direct tendency to cure. A better proportion of those treated by lumbar puncture recover than of those not so treated in Dr. Koplik's experience. His paper will appear in full in an early issue of the MEDICAL NEWS.

Spasmodic Stricture of Esophagus.—Dr. James Tyson, of Philadelphia, described a case of cardiospasm in which the patient, though not suffering from any gross pathological condition in the esophagus, find it extremely difficult to swallow. After food had been taken and apparently swallowed the patient felt a lump behind the lower end of the sternum. Unless this was relieved by forcing into the stomach the food would later be returned by regurgitation. The method of forcing consisted of drinking rapidly large quantities of fluid. On one occasion Dr. Tyson saw the effort required at the end of a meal. The patient drank in large gulps about eight ounces of hot tea, about eight ounces of cold milk and then, finally, about six ounces of cold water, after which by a supreme effort the food entered the stomach. Dilatation of the cardiac end of the esophagus by means of an instrument resembling certain urethral dilators was attempted and with some success. The instrument was passed into the stomach, closed and then drawn out open. The patient complained of great discomfort associated with these manipulations, however, and refused to have it repeated. The spasm recurred and gastrostomy was performed.

Cardiospasm, Idiopathic; Dilatation of the Esophagus.—Dr. B. W. Sippy, of Chicago, presented the specimens from a case of cardiospasm, showing great dilatation of the esophagus so that instead of 100 c.c., as is normal, it held 500 c.c. of fluid. Just about the cardiac orifice the fibers, circular and longitudinal, of the esophagus had become hypertrophied to at least six times their normal thickness. There was no stricture of the esophagus at any point and apparently no cause for the cardiospasm and dilatation. The patient was a physician's wife and the condition at first was thought to be pyloric stenosis with vomiting. No narrowing of the pylorus could be found. The presence of the destructive condition in the esophagus was detected by Dr. Sippy *intra vitam* but the patient was too far gone to be improved. The X-ray picture of the esophagus with the use of bismuth had especially aided in the diagnosis of esophageal dilatation.

Record Esophageal Dilatation.—Dr. Francis Kinnicutt, of New York, then presented the specimens from a case of dilatation of the esophagus which are the largest on record. The esophagus held 1,800 c.c. of fluid, eighteen times the normal amount. There was in this case also a dilatation of the stomach. No adequate cause could be found for either, though the presence of some narrowing of the pylorus might account for the gastric condition.

At the banquet a series of lantern slide illustrations of certain recently described parasitic protozoa were exhibited.

Protozoa of Scarlet Fever.—Dr. F. A. Mallory, of Boston, demonstrated the appearances in the skin in early stages of scarlet fever which he has recently described and which seem to be evidence of the presence of protozoa, the probable cause of the disease. The most striking of these appearances is a rosette-shaped body not unlike a similar appearance seen in the life cycle of the malaria parasite just before the *Hematozoon malariæ* of Laveran breaks up into the smaller bodies that constitute the second generation of the malarial parasite. The appearances seen in scarlet fever are best observed on the second day of the cutaneous rash. They usually occur within the epithelial cells but have been observed also in the lymph spaces in the corium. These observations seem to demonstrate that the appearances are not those of degeneration in the epithelium, since they occur also outside of the cells. The rosette form of the scarlet fever protozoon is about one-third larger than the malarial parasite of the tertian variety.

Proof Not Degeneration Phenomena.—Some of the slides show the parasite also within epithelial cells in which mitotic figures are to be seen. This indicates an active healthy division stage of the cell and would seem to preclude all idea of degeneration being the cause of the appearances degeneration and multiplication by mitosis being incompatible in the same cell. Besides the parasite does not take the stain of degenerative material, but the vivid coloring of living material. Certain of the stages of the parasite are very small and apparently have ameboid movements.

Trypanosomiasis Multiplex.—Dr. Frederick G. Novy, of Ann Arbor, Mich., then demonstrated the various forms of trypanosomes. For a time it was thought that there was only one type of trypanosome, but recent investigations have shown that there are many, some pathogenic for one animal, some for another. The surra of the Philippines and of South Africa are two distinct diseases. There is besides a South American trypanosome. In this country certain rats are affected by a special trypanosome which is not pathogenic for rabbits. Dr. Novy showed the special peculiarities of the various trypanosomes, some larger and slender with a large undulating membrane, some shorter and thicker, with flagellate terminations. A knob-like termination to the flagella characteristic of one form that does not occur in others. While belonging to the same family

with many appearances in common and a similar method of division there are separate forms requiring special study.

Chloroma and Eosinophilia.—Dr. George Dock, of Ann Arbor, Mich., exhibited some slides from the blood and various tissues of a case of chloroma in which many large eosinophiles, filled with characteristic granulations, were to be seen. Some of these cells showed degenerative areas with vacuoles and very irregular grouping of the granular material. Large lymphocytes with but a narrow area of protoplasm were also present, some of them of small size seemed to be incompletely developed, many of the large eosinophiles seem to be myelocytes; that is, cells of bone-marrow origin, and are apparently the result of a natural but unsuccessful reaction to some irritant in the circulation.

SECOND DAY—MAY 11TH.

New Members.—The following nominees recommended by the Council for membership were elected: Philip King Brown, of San Francisco; Joseph Collins, of New York; David L. Edsall, of Philadelphia; Frederick Gault Finley, of Montreal; Hermon C. Gordinier, of Troy, N. Y.; Richard M. Pearce, of Albany, N. Y.; Mark W. Richardson, of Boston; Richard P. Strong, of the U. S. Army .

The following were elected as honorary members: Beverly Robinson, of New York; Starling Loving, of Columbus, Ohio; Henry G. Walcott, of Boston, Mass.

The following nominations for office, made by the Councillors were accepted and the officers for the next year are, for President, Edward L. Trudeau, of Saranac, N. Y.; Vice-President, Frank Billings, of Chicago, Ill.; Secretary, Henry Hun, of Albany, N. Y.; Recorder, Solomon Solis-Cohen, of Philadelphia, Pa.; Treasurer, J. P. Crozer Griffith, of Philadelphia, Pa.; Councillor, F. Forchheimer, of Cincinnati, Ohio; Representative in the Executive Committee of the Congress of American Physicians and Surgeons, William Osler, of Baltimore, Md.; Alternate Representative, Francis H. Williams, of Boston, Mass.

(To be Continued.)

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, held March 14, 1904.

The President, Thomas E. Satterthwaite, M.D., in the Chair.

Symposium on Dilatation of the Stomach, Gastroptosis, and the Methods of Physical Diagnosis.—This was opened by Dr. Robert Coleman Kemp, who said it had unfortunately been too often the habit to depend on the examination of the stomach contents alone, and to neglect the investigation of the motor functions and the position of the stomach itself. The latter is necessary in order to arrive at an accurate diagnosis, as well as give a correct prognosis and undertake proper treatment.

Atony of the Stomach.—This must necessarily first occur before dilatation of the stomach is produced. Atonia gastrica may be defined as a loss of tone or contractile power in the muscles of the stomach, so that the organ becomes distended and does not contract about its contents, with a resulting motor insufficiency. While the dilatation of the stomach in gastroptosis is disputed by some, his own observations have shown that dilatation does exist, and with it, necessarily, a varying degree of motor insufficiency.

Dilatation of the Stomach.—Boas has demonstrated that an apparently dilated stomach may really be in a condition of compensatory hypertrophy. It may, therefore, be stated that as long as the functions of the organ are normal, the condition met with cannot be regarded as pathological. In dilatation the lesser curvature maintains in general its relation to the diaphragm, and this is the differential point between dilatation and gastroptosis. A number of forms of acute dilatation have been described. The first is the result of acute inflammation of the gastric mucous membrane. It is uncertain whether it depends on pyloric spasm or paralysis of the gastric muscles, or on both these causes. The second is a postoperative dilatation, following abdominal section, especially. It would seem to be due to some shock of the sympathetic system, either from the operation or the anesthetic, or possibly, later, from uremia or sepsis. Among the other types of acute dilatation mentioned are the following: In typhoid fever; during attacks of migraine and just preceding epileptic seizures in certain instances; during the course of pneumonia and other pulmonary diseases; in convulsions in infants and young children from overloading the stomach; in attacks of pseudo-angina pectoris from indiscretion in diet.

Chronic Dilatation.—Overfeeding and chronic indigestion are undoubtedly causes of dilatation of the stomach in infants and young children. Holt believes intestinal putrefaction exciting convulsions in young children to be an important factor in the production of epilepsy. Dr. Kemp regards acute dilatation of the stomach with convulsions as an equally powerful factor, when frequently repeated, in producing the convulsive habit, and thinks that some cases of epilepsy can certainly be attributed to this cause. Moreover, chronic dilatation of the stomach is itself one of the causes of intestinal putrefaction and disturbance. Among other etiological factors of chronic dilatation are chronic gastritis, atony of the stomach, rapid bolting of food, spasm of the pylorus due to gastric ulcer, and benign and malignant pyloric stenosis. Each case should receive the special treatment called for by the existing conditions. Dr. Kemp washes out the stomach often only in cases in which there is chronic gastritis with the production of considerable mucus, or when there is much retained food with fermentation.

Gastroptosis.—If gastroptosis exists, some enteroptosis necessarily accompanies it. The determination of the position of the stomach, in order to secure the best kind of treatment, is of great importance, and transillumination of the stomach he considers the ideal method for accurate diagnosis. The treatment consists in the following measures: (1) The correction of the functional derangement of the stomach by appropriate diet and medication; (2) regulation of the bowels; (3) mechanical support to increase the intra-abdominal tension, such as (*a*) various silk abdominal supporters; (*b*) bandages (as the Van Valzah-Hayes' method); (*c*) Gallant's corset; (*d*) Rose's plaster belt. He had seen some brilliant results from the last named. Recently he had employed for this belt rubber plaster on moleskin. The sweat evaporates through it on account of its loose texture, and it can be worn for quite a long time with practically no irritation.

Cases at the Manhattan State Hospital, Ward's Island.—Dr. Kemp presented colored diagrams made from forty epileptics in these institutions. The anatomical regions were marked out in blue pencil on the abdomen of each case, and during transillumination of the stomach the outlines of the organ were drawn in color. These markings were reproduced in the diagrams shown. Thirty-four of the patients were females. In 16 there was gastroptosis, in 16 dilated stomach, and in 2 the stomach was in normal position. In the 6 males

there were 5 dilated stomachs, while in 1 the stomach was in normal position.

Comparative Methods of Locating the Position of the Stomach.—Having stated that the standing posture was in general the most favorable for examinations, he spoke of changes in the position of the stomach due to ingesta. In the books it is stated that the empty stomach lies for the greater part of its extent beneath the ribs on the left side, extending a short distance below them, that when partially full it descends midway between the ensiform process and the umbilicus, and that when full it comes to within a few finger-breadths of the umbilicus. All this is true when the subject is in the dorsal position, since the suspensory ligaments of the stomach are relaxed, and as the organ fills up it gradually gravitates downward. In the standing position, however, as can readily be shown, the stomach, even when empty, at once descends to the full length of its suspensory ligaments, and its lower border is at a constant level, or within about an inch of the same, whether the organ be full or empty.

The Stomach Whistle.—To demonstrate this, Dr. Kemp devised a simple instrument known as the "stomach whistle," which consists of a rectal tube of small caliber with a whistle in the end. To it is attached an ordinary aspiration bulb without valves. The tube is inserted, the finger placed over the open end of the bulb, and a single bulbful of air forced into and aspirated out of the stomach by short and intermittent contractions. This entirely eliminates the possible chance of distending the stomach with air, and the organ remains practically empty. A stethoscope is placed on the abdomen, and the point of greatest intensity of sound is marked by a cross with a colored pencil. The tube is pushed in and out, and various points of sound are marked. The lowest is the lower border of the stomach. If gastrodiaphany is then performed, it will be found that the lower margins absolutely correspond. This is also a further evidence of the accuracy of the latter method.

Various methods of locating the stomach were tried on the same cases and, as a check, transillumination was employed as the last procedure in each instance. (1) Inspection was tried many times, but without success. (2) Carbonic acid gas often failed, and it was found impossible to regulate the amount of gas produced by the sodium bicarbonate and tartaric acid. (3) By administering small quantities of these drugs, with the patient standing, it is possible in a certain number of cases to map out approximately the lower margin of the stomach by listening with the stethoscope to the sound of the effervescence. (4) Inflation with air is advised by many authorities. The method may, however, sometimes cause great discomfort. It is liable to overdistend the stomach, and may even be a source of danger. On many occasions what was apparently stomach becoming protuberant on the abdominal wall was shown by transillumination to be intestine forced out laterally and forward by the stomach. (5) Simple percussion in various positions. (6) Auscultatory percussion. (7) Reichmann's auscultatory percussion rod. (8) Inflation with water seems to be a fairly good method, as it is easier to differentiate between dulness and tympanites than between the different forms of tympanites. (9) Inflation of the intestines with air is inaccurate. If water is employed, its acts as an enema. (10) The ideal method is transillumination, originally devised by Einhorn. As an improvement in technic Dr. Kemp has of late employed fluorescent media. By means of these he has found it possible to transilluminate the stomachs of fat subjects, which were formerly unsatisfactory, and, in general, the transillumination is increased nearly one-half. As a matter of scientific exactness, Dr. Kemp suggested the infusion of radio-active saline solutions into animals and also their hypodermatic use. The experiments made, however, showed no results from the standpoint of physiological medicine, and at present he felt that such solutions have no therapeutic value whatever.

The Relations of the Stomach to Auto-infections.—Dr. Wm. H. Thomson said he would confine his remarks to the relations of the stomach to certain auto-infections which seem to be chiefly caused by changes in the tone and motility of the stomach walls, which changes appear to be closely connected with the etiology of some common nervous derangements. In the first place, when a nervous disorder is intermittent, it may be assumed that it is one due not so much to a neurosis as to a toxemia. He had no doubt that the great majority of the attacks of epilepsy are primarily due to a toxemia. Nervous symptoms dependent upon organic changes are never intermittent, and while it is true that in some cases of epilepsy there is a persistent source of irritation in the form of an organic change produced by traumatism or a localized lesion, yet even here the attacks are intermittent; which could not possibly be the case if the traumatic irritant were the sole cause. Therefore, even in traumatic epilepsy something else besides the standing local irritation is required to develop the convulsive paroxysm, and that something is most certainly one of the forms of toxemia. He believed that in time a case of so-called idiopathic epilepsy may acquire an organic basis, on the principle that every nervous function which is not original to the cerebral cortex, but is acquired, has an anatomical basis there after the function has been acquired. Now apply this principle to nervous pathology. In the brain-training period of childhood let us suppose that an abnormal or diseased habit is being contracted by the special and selective operation of some blood-poison on a special cortical area. It is only consistent with general law that such poison may in time, by repeatedly acting on the same area, finally cause an anatomically organized area of morbid activity. While not denying that congenital malformations may in some instances be the origin of epilepsy, it may be inferred that the great majority of epilepsies are acquired. Hence the extreme practical importance of preventing epileptic attacks from becoming habitual, and, in order to accomplish this, of making every possible effort to discover the exciting causes of the attacks. Dr. Thomson said his criticism of the current views of the mechanism of an epileptic seizure was that it is looked upon as a primary discharge of cortical motor cells. But no motor cell ever discharges itself; it is invariably in response to some afferent excitation alone that such a discharge can occur. When we seek for causes of undue afferent excitability, it is only in toxemias that we find the most conclusive illustrations, and this should lead us to attach great importance to every means which will enable us to be more precise in our examination of the organs most concerned in causing auto-infection. Gastric atony and dilatation, for example, always imply not only deficiency of muscular power, but also qualitative changes in the normal secretions of the stomach; and it should never be lost sight of that all digestive secretions are also powerful antiseptics, so that deficiency or perversion of these of itself disposes to self-poisoning. He welcomed, therefore, all measures which tend to improve our means of diagnosis.

Gastrodiaphany, or Transillumination of the Stomach.—Dr. Max Einhorn said that the great advantage of this method is that it affords an opportunity of examining the stomach in the natural state, and not when it is overdistended, as by gas. A great many mistakes

have been made in consequence of such overdistention, and the method of using effervescing mixtures is attended with some danger. Gastrodiaphany is undoubtedly a good method, but it is rather an elaborate one, requiring a dark room, an electric battery, and a special apparatus. It is particularly useful for gastroptosis and when tumors are present. For the general practitioner he thought the most serviceable method was the production of a splashing sound when the stomach is partially filled with liquid. This, he believed, affords the most accurate means of ascertaining the situation of the stomach and also the outlines of the organ. He would, therefore, place it first as a means of diagnosis.

Dilatation of the Stomach.—Dr. Geo. R. Lockwood said that if a stomach in the morning fasting state habitually contains food remains, or if it contains a greater amount of gastric juice than 100 c.c., it may reasonably be assumed that pyloric obstruction exists, no matter what the actual size of the stomach may be. We find large stomachs that are not to be considered as "dilated," since they are adequate in a muscular sense and empty themselves as they should; on the other hand, there are stomachs of normal or diminished size which are muscularly inadequate and do not properly empty themselves. The latter may be regarded clinically as dilated stomachs, although they are not dilated. To determine absolutely the actual size of the stomach we need to locate the two curvatures and the overlapping of the stomach area to the right of the median line. The lower curvature can be readily made out in the great majority of instances. In Dr. Lockwood's experience the results of gastrodiaphany have been most misleading, and he has of late excluded the method from the list of available means for diagnosis. He has obtained the most accurate results from inflation, combined with palpation and inspection; and next in order of value he would place the area of succussion sounds obtained. With an oblique light shining back of the recumbent patient, the shadow outline can usually be distinctly seen. If the upper curvature is not observed descending on inspiration, with the respiratory descent of the greater curvature, the diagnosis of an enlarged stomach can be made with reasonable certainty, and gastroptosis excluded. Inflation should regularly be practised by pumping air into the stomach through a tube, and not by the use of effervescing powders. In cases where such an inflation is inadvisable, a moderate inflation by effervescing powders may be made, and light percussion, preferably by auscultatory stroke percussion, employed. By observing changes in note before and after such inflation, colon tympany need not be mistaken for gastric. The area over which succussion sounds are heard affords very reliable evidence as to the position of the lower curvature. This sign is fairly accurate, provided there be no liquid in the transverse colon; a point which may be determined by tapotement in the cecal region. In normal cases the gastric tympany rarely extends beyond 6 c.c. to the right of the median line. An extension of the tympanic area to 8 c.c., or more, affords fair presumption of enlargement.

The detection of the upper border of a normally located stomach is almost an impossibility. Consequently the exact vertical dimension can rarely be determined. The estimation of the exact size is further rendered difficult by displacement downward of a dilated stomach, or its assumption of the vertical position. He thought the mistakes in diagnosis dependent on two errors: (1) In basing a diagnosis on the location of the greater curvature alone, forgetting that it might be a gastroptosis alone, or a displacement coexistent with a dilatation. (2) In making a diagnosis of dilatation from the size of the stomach alone; the sole sign of dilatation that is accurate being the detection of food remains or of contained secretion in a fasting stomach. No diagnosis, therefore, can be made without careful and, if necessary, repeated examinations of the gastric contents in the fasting state.

Gastroptosis.—Dr. Achilles Rose thought this term unfortunate, and preferred *gastroptosia*, which, correctly translated means abdominal tosis, not necessarily ptosis of the stomach alone. Gastroptosia also has the advantage of including the relaxation of the abdominal walls. Relaxation of the abdominal muscles forms a factor in gastroptosia, and it is the first factor we have to consider in therapy. Those who have used the term *atonia gastrica* in the sense of motor insufficiency of the stomach had caused much confusion, since atonia gastrica may exist without such insufficiency. Gastroptosia is identical with relaxation, and constitutes atonia gastrica. Atony may cause motor insufficiency, or, in turn, may be caused by insufficiency; but it may exist without insufficiency when the resistance at the pylorus is subnormal. Gastroptosia is never present without dilatation. Gastroptosia depends on relaxation, and relaxation of the fibers of muscles means elongation of the fibers; therefore relaxation is, *eo ipso*, dilatation. Many cases which were formerly classified as neuroses are now recognized as instances of gastroptosia with gastric and nervous symptoms. All forms of anomalous gastric secretion may be associated with gastroptosia, and prompt relief from such abnormal secretions and from motor insufficiency may often be secured by proper treatment of this condition.

Treatment.—In the treatment of gastroptosia the principle to be kept in view is relief from relaxation, and, first of all, from abdominal relaxation, by means of mechanical support of the abdominal walls. This can best be given in most instances by strapping in the way that has been suggested by Dr. Rose. Very often strapping alone, without any other treatment, will restore the secretory and motor functions of the stomach to a normal state. Gastroptosia may play a part in diseases of the organs of respiration and circulation, and in illustration he quoted a cardiac case reported by Groddeck. Dr. Rose said he could cite just as striking examples from his own experience, or he might refer to a patient he had seen under examination before a medical society. Everyone present studied the auscultation and percussion signs, but not a single physician took notice of the most remarkably pronounced gastroptosia existing. They all spoke of various remedies to improve the circulation, but not one had an idea of the most important of all the remedies called for in the case, the support of the abdomen.

The Surgeon's Point of View.—This was discussed by Drs. R. H. M. Dawbarn and George E. Brewer. The latter said the cases for operative interference could be divided into three classes: (1) Malignant disease; (2) benign disease, such as ulcers and, very rarely, tumors; (3) spasm, when surgical rather than medical aid is required; the condition having gone beyond the point when efficient relief can be afforded by medical remedies or mechanical support. In gastric ulcer it is universally conceded that one of the most essential requisites of successful treatment is rest, and there can be no question that in many instances a gastro-enterostomy affords an opportunity for the healing of the ulcer better than can be secured in any other way. The spasmodic conditions produced by ulcers can also be promptly remedied by surgery. The operations for the relief of the various forms of benign disease show a very low rate of mortality. In conclusion, Dr. Brewer made a suggestion as to the importance of the early recognition and early surgical treatment of dilatation in the "cancer age."

The surgeon is now, he said, making much earlier diagnoses of carcinoma than formerly. This is largely due to laboratory methods; but even these do not give the diagnosis in time to do a really radical operation. Whenever, therefore, a person at the cancer age has a sudden onset of digestive trouble, or a sudden increase in such trouble previously existing, suspicion should at once be aroused. An early exploratory incision is attended with a minimum of risk, and if malignant disease is discovered, it can be treated while the affected area is still very limited and glandular involvement has not as yet occurred. Only thus can the disease be reached at a time when it may be thoroughly eradicated, and by the adoption of this plan excellent results are now beginning to be shown.

The Relation of the X-ray and Radio-active Solutions to Examination of the Stomach.—Dr. Sinclair Tousey read a paper on this subject. He said he had repeatedly determined the presence of cancer of the stomach by the use of the X-ray alone. At present he is inclined to rely, in stomach work, more upon the fluoroscopic than upon the skiagraphic examination. Sometimes a tumefied anterior wall or pyloric extremity can be quite positively made out with the fluoroscope, and be merely indicated with a reasonable degree of probability by a skiagraph. In other words, a tumor of the stomach is almost transparent to the X-ray, and, being in constant motion during respiration, is better studied directly. Simple dilatation of the stomach and gastroptosis, without the presence of a tumor, would scarcely be capable of demonstration by the X-ray under ordinary circumstances; and it was with a view to the diagnosis of these conditions that his experiments were undertaken. Having given a résumé of his observations up to the present time, Dr. Tousey said that his conclusions, based on these, were as follows: (1) Radio-active and fluorescent solutions are innocuous when given by the mouth or subcutaneously; (2) they do not produce, either singly or in combination, sufficient fluorescence to be of value in the examination of the stomach without the use of some additional light to excite their fluorescence; (3) they will in some cases be of the very greatest assistance in the X-ray diagnosis of stomach lesions; (4) they will in some cases be of value in the X-ray treatment of stomach lesions.

SOCIETY OF THE ALUMNI OF CITY HOSPITAL.

113th Stated Meeting, Held March 9, 1904.

Erysipelas.—Dr. J. W. Draper Maury exhibited the graphic chart of a case of this disease which had been treated throughout with pure carbolic acid followed by alcohol. The chart showed an unmistakable and very immediate fall of temperature following the application of the acid, the variation in many instances during the five days covered extending over six degrees.

Experimenting with the McGraw Ligature.—He then presented a series of specimens of dogs' and pigs' stomachs and guts illustrating the recent experimental work done at the Surgical Laboratory of Columbia University. He said that at the suggestion of Dr. Weir, about a year ago, he had endeavored to use the McGraw elastic ligature in such a manner as to punch out a piece of the coapted viscera in gastro-enterostomy or in entero-enterostomy. Although the simple McGraw stitch has now been used many times on the human subject with perfect success by such men as Ochsner, of Chicago, and others, there exists a doubt in the minds of some surgeons that as patent and as lasting an orifice can be made with it as is produced by resection of the part at the time of operation or by use of the Murphy button. Dr. Maury believed that the stitch had now been so far perfected as to warrant one in stating with certainty that it would punch out all the material included within it.

Dr. Carter S. Cole, in opening the discussion of these specimens, said that the objection to such cumbersome mechanical devices as the Murphy button and their dangers were well known. He has for many years thought that a simple incision with ligature was better than any other technic. As to the erysipelas chart presented, he said that he was one of the first to use the method, having employed it seven or eight years ago. In his experience of thousands of cases demanding antiseptic treatment at the Hudson Street Hospital, he has found it the safest and surest manner of combating and preventing infection. He said that the time which should elapse between the application of the phenol and the brushing of the parts with alcohol depended on several factors. He cited the case of a shoemaker who, having a pain in his hip, by accident rubbed both hips with a pure carbolic solution thinking it was alcohol. A physician, who arrived twenty minutes after this was done, found both sides deeply eschared. He decided that it was hardly possible to prevent sloughing by the use of alcohol, but for the sake of experiment, painted one side with this fluid. The result was that despite the length of time elapsed, the untreated side went on to slough, whereas the tissue which had been swabbed with alcohol, recovered its normal condition in a few days.

Dr. Thomas F. Riley called attention to the very interesting fact that all the phenol group, when applied to the skin, tended to depress the temperature. Guaiacol and creosote will effect as extensive and as rapid a depression of temperature as phenol. He therefore felt that there was some reason to doubt whether the variations in the chart shown were due to the destruction of the *Bacillus erysipelatous*, as Dr. Maury and others had thought or to the foregoing influence. It was interesting further to note that while the progress of the disease had been checked from passing from the trunk to the thighs by deeply burning the latter with the phenol, nevertheless the infection had spread all over the torso and arms, although the treatment had been used with sufficient vigor to produce blistering in several places.

Dr. J. F. Terriberry said that in his experience tincture of iodine applied locally and croton oil applied internally is a combination which acts very well.

Dr. Cole in answer to some criticisms on the danger of pure carbolic, said that in the Hudson Street Hospital, he and his assistants used it as free as water, and that in his experience of several thousand cases, he never had seen even a suggestion of poisoning from the use of pure acid. The explanation of this is that it destroys the avenues of ingress and therefore is not absorbed by the system as is the case with weak solutions. The time elapsing between the application of the phenol and the swabbing with alcohol is determined entirely by the result which is sought. The drug first irritates, then stimulates, then produces anesthesia and lastly destroys the part. A practised eye can determine when each of these stages is reached.

Dr. Maury, in closing the discussion, said that in using the elastic ligature, it was not necessary to freshen the peritoneal surfaces which it brought into contact, the trauma produced by the technic being all sufficient to cause the parts to adhere very firmly. An interrupted Lembert line of sutures should be so placed as to securely enclose the ligature. The results obtained by the technic at present used in the Surgical Laboratory have been very encouraging.

The Prevention of Diseases of the Accessory Sinuses.—Dr. D. Bryson Delavan read this paper. He said that very special import had been given to this neglected subject by the advent to the city of a pecu-

liarly infectious form of grip. Many of these cases, instead of developing into pneumonia, had insidiously but often seriously involved the accessory sinuses, and he believed that a repetition of warnings previously given by him to the profession would not be out of place. Next to prevention, he said that early recognition and treatment of acute attacks of involvement of the mucous membranes of the respiratory tract were of paramount importance. As elsewhere in surgery, free drainage from the upper half of the nasal cavity is essential in every case. Malformations of the middle turbinated bone and displacements of the septum are among the most frequent causative factors in sinus disease. The exciting causes of sinus disease are varied. Inflammatory change may be brought about in many acute infections such as pneumonia, diphtheria, measles, scarlet and typhoid fever, smallpox, cerebrospinal meningitis, erysipelas and grip. Many cases are undoubtedly directly due to the inhalation of dust in our windy and filthy streets. Wind is due to other causes than to high buildings. Inveterate users of the open automobile are beginning to show that this machine is causing many serious sinus affections. Favorable results can usually be obtained by a prompt and thorough treatment of most cases of sinus inflammation due, as it often is, to the insidious disease known as grip; it should be watched with care and treated from the onset as a disorder likely to produce serious results. As in other conditions satisfactory treatment of the acute conditions will render chronic cases very rare. The principles of treatment are simple, being based entirely upon the conception that the condition arises from retention of secretions through blocking of the outlets. The indication is to drain and to clean. The congested and swollen parts may be contracted by suitable applications and free drainage will result without surgical intervention. A depletion of the nasal circulation is of the first importance. Drugs, however, are by no means the only method of obtaining this end. The heart must be kept quiet, and rest in bed, an even temperature, mild catharsis may all be indicated. Belladonna or aconite, or in cases of severe neuralgia, phenacetin and salol are the author's favorite drugs. The local treatment is of paramount importance and it should be borne in mind that this should be absolutely non-irritating and painless. The secretion should be gently removed from the surface and a spray of two per cent. solution of cocaine thrown upon the mucous membrane affected. After this drug has contracted the lower part of the nasal cavity, a spray of adrenalin or, preferably, a solution of the extract of suprarenal gland may be thrown as far upward as possible. The alternation of these two drugs may be necessary more than once. During the time of contraction of the membrane, there will be free discharge from the sinuses, and although the openings may close within a few hours, the relief afforded is usually sufficient to prevent a chronic involvement. It may be necessary to utilize this method several time a day. In this case the use of cocaine will of course be admissible because of the danger of inflicting the habit. In general the writer concluded that much could be done in the prevention of sinus disease by a recognition of the conditions under which it is likely to occur; by removal or mitigation of these conditions after their detection; by applying immediate treatment to those cases in which acute inflammation had begun.

Dr. D. H. Wiesner said that the subject of this paper could not be treated lightly. The amount of dust in the streets of our great cities is almost inconceivable, and the amount of damage done to our mucous membranes and sinuses is absolutely unknown. He agreed with Dr. Delavan that the use of cocaine for the relief of nasal engorgement was a very dangerous procedure.

Dr. W. B. Johnson said that a great many people suffered from acute attacks of sinusitis which were merely of a catarrhal kind and which, as was well known, in the case of the mastoid, will not go on to suppuration. The suggestions given as to methods of preventing suppuration were very useful. Adrenalin, he said, might in some individuals prove to be a severe irritant, one of his patients having had to sneeze for two hours after a single application of one to one thousand. Crushing the turbinate bone, as has been recommended by some Europeans, is absolutely non-surgical and contraindicated.

Dr. George B. McAuliffe called attention to the very interesting fact that ethmoiditis and probably other sinus invasions could actually be caused by the continued use of cocaine. He emphasized the importance of the element of rest. This is a most potent curative agent for that large class of persons who are unable to see their physician two or three times a day. These people should be put in a semirecumbent position and given aconitia, which is better than aconite, because it can be absolutely graded; one five-hundredth of a grain every hour. He spoke of the dreadful danger of cocaine, and suggested that if it must be used, adrenalin should be employed first, so as to limit the cocaine absorption as far as possible.

Dr. P. B. Hough said that he had not found it necessary to use cocaine in but very few cases, a mild alkaline spray serving the purpose sufficiently well and with less danger.

Dr. Delavan, in closing, said that the general practitioner neglected these cases so extensively that even today cases in which destruction of the organ of special sense had gone on almost to completion, were not rare. While extensive operations for these cases may primarily give good results, ten years later they may prove to be wofully unsatisfactory. He said that the internal use of drugs is undeniably important. For years, professional singers and others have used aconite. As for the cocaine habit, he believed that the uncomfortable period can best be bridged over by suprarenal extract. He considered it better than adrenalin, in that it is less expensive and has not the irritating qualities of the extract.

Personal Experience in the Treatment of Typhoid Fever.—Dr. Carter S. Cole said that it would be idle in the few moments allotted him to give even a summary of this subject. He said that our individuality must be impressed upon our work and it was with this understanding that he presented a view of his experience in treating this all too common and too frequently fatal disease. In 1887, he stated that in his opinion a nurse who was fitted to properly care for a case of typhoid needed no other testimonial to her ability in her profession. Fifteen years of practise have convinced him of the truth of this statement and furthermore that the physician who is abreast of every possibility in that disease is thoroughly competent to care for any conceivable ill of mankind. The author then considered the relation of treatment to temperature. The latter, he said, was a necessity. Every case of typhoid has its own peculiarities, not only in regard to temperature variation but also as to nutrition, intestinal and nervous conditions, etc. One patient has a high fever with an eruption from his neck to his feet; the other never has a temperature over 101° F. and has an almost imperceptible abdominal rash. The one is delirious almost all the time and dies of cardiac failure at the beginning of the fifth week. The other is never delirious but has almost a melancholia from which he does not recover for nearly a year. A child has a frightful attack of typhoid of the high-fever type, with profuse eruption, accompanied by pneumonia in the original attack and by an infection of the large intestine in the relapse. Her nurse contracts

the disease and has a comparatively simple attack, with few spots, with low temperature, her chief difficulty being an ever-present nausea. The first is fatal; the second makes a good recovery.

Dr. W. L. Baner, in opening the discussion of this paper, said that he considered the feeding of typhoid patients the most important part of the treatment of the disease. No more food than can very easily be digested should be given. He did not consider a widely distributed and very marked eruption such as Dr. Cole had described to be necessarily significant in determining a bad prognosis. These cases often do well and it has been noticed that they generally give a very positive reaction to the tests for the disease.

Dr. W. Ridgely Stone considered that temperature alone was but a poor indication for typhoid baths. History repeats itself over and over again in showing that low temperatures in typhoid often end fatally. It is rather the nervous and circulatory symptoms which call for hydrotherapy, the mere question of temperature being a matter of small import.

Dr. Cole, in closing, said that he considered the temperature to be a normal condition and used it simply as a guide for the nervous condition. He considers that the baths are very efficacious in reducing abdominal distention. As to the eruptions, if they be ubiquitious and more or less confluent, which is the type dwelt upon in his paper, the giving of a hopeful prognosis is, in his opinion, a very doubtful procedure.

BOOK REVIEWS.

THE PRACTICE OF OBSTETRICS. Designed for the Use of Students and Practitioners of Medicine. By J. CLIFTON EDGAR, Professor of Obstetrics and Clinical Midwifery in the Cornell University Medical College; Attending Obstetrician to the New York Maternity Hospital. With 1221 Illustrations, many of which are printed in Colors. P. Blakiston's Son & Co., Philadelphia.

THE increasing interest in scientific obstetrics which has gone hand in hand with the development of gynecology has led to the appearance of numerous excellent treatises on this subject during the past few years. Few medical subjects require so much illustration or lend themselves so readily to pictorial embellishment and modern publishers have not been slow to avail themselves of the opportunities offered for the production of attractive books. It must be confessed, however, that this volume with its twelve hundred excellent pictures puts them all to the blush and stands *facile princeps* at the head of all text-books of midwifery.

The arrangement adopted by the author is a marvel of simplicity and is rendered still more practical by the ingenious system of subheadings in different styles of type consistently carried through the entire book. The subject-matter is divided into ten parts as follows: Physiology of the Female Genital Organs, Physiological Pregnancy, Pathological Pregnancy, Physiological Labor, Pathological Labor, Physiological Puerperium, Pathological Puerperium, The Physiology of the Newly Born, The Pathology of the Newly Born, Obstetric Surgery. A formal section on Anatomy has been omitted since discussions of the gross and minute anatomy of the pelvic viscera appear in appropriate places in the parts on pregnancy and labor.

The work throughout gives evidence of the greatest possible amount of thought and care devoted to the production of a book, detailed and comprehensive yet practical and convenient for reference, at the same time useful to the student and to the clinician. The statistical data on which the author's conclusions are based include 2,200 cases from the New York Maternity Hospital and from the Mothers' and Babies' Hospital.

In many ways the book differs from the stereotyped form of obstetrical treatise and gives information of a type often slighted in the standard works. Such for example is the section on monstrosities which contains 144 illustrations of the different forms of abnormalities encountered. Other chapters to which the author evidently attaches considerable importance are those on the diseases of the newly born, pelvic deformity, obstetric surgery, cephalometry and the mechanism of labor.

Of the very numerous illustrations little but praise can be said. They have been chosen with remarkable discrimination and form one of the noteworthy features of the book. In spite of their large number they nearly all serve a distinct purpose though the captious might perhaps think that figures 190-195 which depict respectively, properly and improperly groomed fingernails, pushing back the cuticle with an orange stick, the orange stick, cleaning the nails with a towel, a hand in a rubber glove and a commerical can each of washing soda and chlorinated lime, do not represent concepts so foreign to the mentality of the average medical reader as to require graphic representation.

It is a great pleasure to be permitted to call attention to what undoubtedly is, and probably will long remain, our foremost handbook of obstetrics.

MEDICAL UNION NUMBER SIX. By WILLIAM HARVEY KING. The Monograph Press, New York.

THIS is a pamphlet written supposedly to show to what absurdities and even loss of life trades unionism would go if pushed to an extreme. Just why the author should have made the medical profession the butt of his observations is hard to understand. The book is not likely to have any influence either for or against the important principles that underlie union for the purpose of securing due rights and which, like every other good thing in life, may and will be abused, but from the abuse of which no argument holds against the proper use.

THE TREATMENT OF FRACTURES. By C. H. SCUDDER, M. D. Fourth Revised Edition. W. B. Saunders & Company, Philadelphia, New York and London.

THE appearance of the fourth edition of this work within a period of four years testifies to its popularity and value. As stated in the author's preface, the book is intended to serve as a guide to the student and practitioner in the diagnosis and treatment, and the latter is illustrated as thoroughly as possible. Mechanical simplicity is advocated. Recognized essentials are an exact knowledge of anatomy combined with accurate observation. A prominent feature of the book is the wealth of illustrations, of which the greater part are from new and original drawings and photographs. The hackneyed cuts of common fractures and dislocations which constantly find a place in one book on surgery after another, are wisely omitted and their place taken by newer and better representations. Naturally X-ray pictures play an important part, and especially interesting are those of the epiphyses at different ages. The question of treatment is very fully considered, the details in the various steps of reduction and the application of splints being in many cases depicted in a series of illustrations. A valuable chapter on X-rays and their interpretation, by Dr. Codman, is appended and also one on terial infection, and are therefore less misleading. The application of the plaster-of-Paris bandage, containing many new and valuable hints.